

UNITED STATES DISTRICT COURT

WESTERN DISTRICT OF NEW YORK

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CAROL S. MARCELLIN, individually and as Co-Administrator.
of the Estate of Charles E. Hollowell, deceased, and JESSICA
HOLLOWELL-McKAY as Co-Administrator of the Estate of Charles
E. Hollowell, deceased,

Plaintiffs,

-vs-

HP, INC., and STAPLES, INC.

Defendants,

* * * * *

HELD AT:

VIDEOCONFERENCED
March 7, 2025

VIDEOCONFERENCED EXAMINATION BEFORE TRIAL

of STEVE W. MARTIN, Non-party Witness, taken by the
Defendants, pursuant to Notice.

APPEARANCES:

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Cynthia M. Belmonte,
Court Reporter
Via Zoom

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STIPULATIONS

IT IS STIPULATED by and between the attorneys for the respective parties that the testimony contained herein may be used upon the trial of this action; that the filing is waived; but require the reading and signing of the transcript; that all objections, except objections as to form, are reserved until the time of trial, and that objections as to form shall be noted on the record; that the examining party will furnish the examined party a copy of the transcript of testimony free of charge, and that the testimony taken before Cynthia M. Belmonte, a Court Reporter and Notary Public in and for the State of New York, whose oath is waived.

* * * * *

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STEVE W. MARTIN, having been first duly sworn, testified as follows:

EXAMINATION
BY MR.LEVITES:

Q. Well, it's nice to meet you, Dr. Martin. My name is Benjamin Levites. I represent the defendants HP and Staples in this case. I'm just going to back up just one moment, Dr. Martin.

MR. LEVITES: So, Steve Schwarz, do we agree to the ordinary stipulations, objections reserved. for the time of trial, except as to form?

MR. SCHWARZ: Yes.

MR. LEVITES: And is the witness going to read and sign?

MR. SCHWARZ: Yes.

MR. LEVITES: And we agree on the Zoom stipulations? It's a remote deposition. We're fine with the witness swearing his oath remotely?

MR. SCHWARZ: Yes.

MR. LEVITES: Okay. All right. Thank you for that, Attorney Schwarz-- I'll call you, for now. I'm usually not so formal, but with Steve Schwarz, but--

Q. So, Dr. Martin, as I said, my name is Benjamin Levites. I represent HP and Staples in this matter. Also

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1 present is the court reporter, Ms. Belmonte, and of course,
2 your counsel, Attorney Schwarz. I will be asking you
3 questions today about a lawsuit filed by Carol Marcellin and
4 Jessica Hollowell-McKay, concerning a fire on January 24,
5 2020, at the residence of Carol Marcellin and Charles
6 Hollowell. Attorney Schwarz may do so as well. So my first
7 question is, do you understand that we're here today
8 concerning Ms. Marcellin's lawsuit in respect of her-- the
9 fire at her residence on January 24, 2020?

10 A. Yes.

11 Q. And have you ever been deposed previously?

12 A. Yes.

13 Q. And when was that?

14 A. A number of times.

15 Q. When was the last time you were deposed?

16 A. I believe it was December of 2024.

17 Q. Okay. So quite recently you've probably heard
18 these things ad nauseam, so I'll go through them quickly.
19 The goal of today is to produce a written transcript so that
20 our conversation reads question, answer, question, answer,
21 and so on. Okay?

22 A. Yes.

23 Q. And in normal conversation, I appreciate when
24 you anticipate the rest of my question, but so I can get the
25 transcript that reads question and answer. If you'll allow

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1 me to finish my question before you give your answer, that
2 will help. And if I hold my hand up while I'm asking a
3 question, I'm not trying to be rude. I'm just letting you
4 know that I'm still asking a question. Is that okay?

5 A. Yes, it is.

6 Q. And equally, if you're giving an answer, I'll
7 make every effort not to begin another question before
8 you're finished. And if I do, please let me know that
9 you're not finished. Is that okay?

10 A. Yes, it is.

11 Q. Okay. And then this part's extra important. On
12 Zoom, do you agree not to use your cell phone or other
13 electronic devices during the deposition when we're not on a
14 break?

15 A. Yes.

16 Q. Okay. And do you have any other notes or
17 documents with you today?

18 A. Not in printed form. My computer, of course, is
19 full of documents.

20 Q. Okay. Would you agree not to refer to any notes
21 or documents other than those we review together in the
22 deposition?

23 A. Yes, I do.

24 Q. Okay. Is there anyone else present in the room
25 with you?

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1 MR. SCHWARZ: Yeah, I just want to say that
2 he has the right to refer to his report at any
3 time, so that may be something you're going to
4 mark, but even if you haven't asked him to, he has
5 the right to look at his report.

6 MR. LEVITES: Understood.

7 Q. And to be clear, Dr. Martin, that's the reason for
8 your testimony today. Of course you can refer to it at any
9 time. I've marked your reports and circulated them to
10 counsel. So we will have that in the record, and you can
11 refer to that at any time. Okay?

12 A. Yes.

13 Q. And I think-- I'm not sure if I got an answer,
14 but is there anyone else present in the room with you today?

15 A. No, there is not.

16 Q. Okay. And you're doing a great job so far of
17 giving verbal answers, but please continue to say yes or no
18 instead of nodding or shaking your head. And similarly, the
19 transcript won't capture tone, so answers like uh huh and
20 nuh uh. Please try and avoid those. All right?

21 A. Yes.

22 Q. And sometimes I might ask you a question that's
23 confusing, and you can always tell me you don't understand
24 the question or you'd like me to repeat it or to rephrase
25 it. But if you do not tell me that you don't understand the

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1 question and then proceed to answer it, it will be assumed
2 that you did understand the question. Is that okay?

3 A. Yes, it is.

4 Q. And we can take a break during the deposition
5 for any time or for any reason. My only request is that if
6 I've just asked a question, please answer it before we take
7 the break. Okay?

8 A. Yes.

9 Q. And without telling me the substance of any
10 conversations you've had with Attorney Schwarz or anyone at
11 his firm, what did you do to prepare for today's deposition?

12 A. I read. Reread my reports, and I reread the
13 number of citations that I made in my report and other
14 documents that I've collected over the course of this, I
15 guess you might say matter or case.

16 Q. Okay, so you talked about the reports, and you
17 talked about the references cited in your reports, and then
18 you said there were some other documents. So what were the
19 other documents?

20 A. Well, there was many documents that I have
21 looked at, have been provided by counsel that we use but did
22 not cite in the report.

23 Q. Okay, so when you say other documents provided
24 by counsel, are you referring to documents produced in
25 discovery in this matter, this specific matter?

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1 Q. I think that would include those, yes.

2 A. Okay, and were there some-- is there some other
3 group of documents other than those exchanged in discovery
4 here that you referred to?

5 A. I could imagine, yes, there are. I don't have a
6 detailed knowledge of exactly what documents were or were
7 not produced in discovery, but I can imagine some of them
8 were, yes.

9 Q. Okay. So just for your reference, the documents
10 that were produced by HP all have a Bates number on them, so
11 all the technical records. So does that help you in respect
12 of answering the last question?

13 A. I think I remember seeing some of the documents
14 with Bates numbers, yes.

15 Q. Okay. And you may have reviewed some other
16 documents that didn't have Bates numbers and might not have
17 been produced in the litigation, but you can't say what
18 those documents are as you sit here today. Is that fair?

19 A. That's correct, yes.

20 Q. Okay. And I think you said of this latter group
21 of documents, the ones that weren't in your reports, wasn't
22 the material cited in your report, and wasn't produced in
23 discovery. Who would have supplied those materials for you?
24 Did you obtain them through your own research? Were they
25 provided by counsel?

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1 there's no technical difficulties.

2 Q. Okay. And if you need anything magnified or
3 zoomed in or highlighted, just please let me know and I'll
4 try and make that happen. Are you familiar with HP as a
5 company?

6 A. Yes, I am.

7 Q. And have you heard of Hewlett Packard before
8 today?

9 A. Yes, I have.

10 Q. And are you aware, sir, that HP is an American
11 company that was founded by Hewlett and Packard in the
12 garage next to a house in Palo Alto?

13 A. I'm not familiar with the details of how HP was
14 founded or not.

15 Q. Okay, but are you aware that what many people
16 believe, what we now call Silicon Valley started in that
17 garage?

18 A. No, I'm not familiar with-- I'm familiar with
19 the term Silicon Valley. I'm not familiar that Silicon
20 Valley was, you know, started in that particular garage, no.

21 Q. Okay, but notwithstanding your knowledge about
22 the founding of HP, you're aware that-- that it's-- you're
23 aware that the allegations against HP in this case are
24 serious, right?

25 MR. SCHWARZ: Object to the form of the

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1 A. I think a combination of those produced by
2 counsel and those produced by my own study, yes.

3 Q. Okay. All right. Well, if I would just ask Dr.
4 Martin if you could just, you know, set-- if you have those
5 documents collected, if you could keep them collected for
6 the time being? I think we'll have plenty to go through
7 today, but in the event that we need to go through whatever
8 those extra documents were, I would appreciate if you could,
9 you know, segregate those. Is that okay?

10 A. Yes.

11 Q. All right. Did you take any medication today?

12 A. Just my normal vitamins.

13 Q. Okay. And are you able to sit through this
14 deposition and answer questions?

15 A. With appropriate breaks, yes.

16 Q. Of course. And please, as I said, I'll be
17 taking regular breaks, you know, every hour to 90 minutes,
18 something like that. And I'm just noting for Attorney
19 Schwarz and Ms. Belmonte, I apologize, but I'm in the office
20 today and they're doing construction, so I have to go down
21 nine floors to use the restroom. So our breaks might be
22 closer to ten minutes than five, but, yeah, we'll be taking
23 regular breaks throughout the deposition today. And can you
24 review documents if they're displayed on your screen?

25 A. I should be able to, so long as they are and

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1 question.

2 THE WITNESS: I--

3 MR. SCHWARZ: You can answer it.

4 A. I don't know that they're serious or not. I'm a
5 a expert witness looking at specific details of the case. I
6 think it's serious if you're the-- if you're Ms. Marcellin,
7 yes.

8 Q. Yeah, so that's what I'm asking. I mean, you're
9 offering an opinion here, contending that HP, that something
10 HP did or did not do, caused someone's death. Correct?

11 A. Yes, I think that's correct.

12 Q. Okay. And would you say that's serious?

13 A. Yes.

14 MR. SCHWARZ: Object to the form of the
15 question.

16 Q. Okay. And you take that seriously, do you not?

17 A. Of course I do.

18 Q. And because you take that seriously, that means
19 you did your work thoroughly and carefully here.

20 A. Of course I did.

21 Q. I mean, you wouldn't come into this case and
22 make the assertions that you've made about HP doing or not
23 doing something and causing someone's death without doing
24 all of your homework to back that up, right?

25 MR. SCHWARZ: Object to the form of the

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question. He's not an expert to talk about the cause of death. You can answer it.

A. Yeah, I'm not here to delve into the details of the death. I'm here to discuss the things that I'm expert in, and that is the battery and the battery management system.

Q. Right. But you testified, sir, that your-- your opinion-- you're offering opinions, contending that something HP did or didn't do caused Mr. Hollowell's death, right?

MR. SCHWARZ: Objection to the form. That is not his testimony. His testimony concerns the failure of the battery pack. You can answer it.

A. That's correct. I'm only-- only looked into the details of the failure of the battery pack that caused a fire.

Q. Okay. And that was a fatal fire, was it not?

A. It appeared to be so. Yes.

Q. Well, did it appear to be or was it?

A. It was written that it was a fatal fire, that's correct.

Q. Okay, so something HP did or did not do caused a fire which was a fatal fire, right?

A. As it pertains to my testimony in my reports about the failure of the battery pack that caused a fire.

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That's correct.

Q. I understand. And to be clear, Dr. Martin, I'm not asking you to opine on Mr. Hollowell's cause of death or anything. I'm just trying to get at, you know, both the gravity of the situation and what was done to arrive at your opinions. So my question is, in determining, in reaching your opinion that HP did or did not do something that caused a fatal fire, you wouldn't reach such an opinion without doing all your necessary homework to back that up, is that right?

A. That is correct.

Q. Okay. And you certainly wouldn't do it without applying the scientific method, right?

A. I always apply the scientific method. That's correct.

Q. And you would agree that part of the scientific method is to test the adequacy and accuracy of your hypotheses?

A. That's part of the scientific method. That's correct.

Q. And what's the other part of the scientific method?

A. There are many other parts of the scientific method.

Q. Could you sketch them for me, just in the most

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general terms?

A. Well, I think the first is the observation of the phenomenon, the gathering of information relating to the phenomenon.

Q. Okay. And then formulating a hypotheses, right?

A. That can be a part of it, yes.

Q. And then testing the adequacy and accuracy of your hypothesis, right?

A. That's correct, yes.

Q. Okay, Dr. Martin, what is your full name?

A. Steve W. Martin.

Q. And have you gone by any other name?

A. I have not.

Q. What is the address of your primary residence?

A. 1912 Leopold Drive, Ames, Iowa, 50010.

Q. Thank you. When did you move there?

A. This particular residence, February 19, 2019.

Q. And are you the owner of the property at that address?

A. My wife and I are, yes.

Q. Okay. Do you maintain residences elsewhere?

A. I do not.

Q. Okay. If you could, please give me a brief summary of your educational background from high school on through your highest degree.

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A. Sure. I spent four years in Mount Vernon Senior High School in college preparatory courses. I then-- my wife and I-- my girlfriend at the time, now my wife and I, went to Capital University in Bexley, Ohio, where I earned a Bachelor's Degree in Chemistry. And after-- while at Capital, I worked as a undergraduate research assistant at Battelle Memorial Institute doing organic chemistry research. After graduating from Capital, I attended Purdue University working with faculty member Austen Angell, in their physical chemistry division. And I earned a PhD in physical chemistry in August of 1986.

Q. Okay. Do you have any licenses or certificates?

A. I do not.

Q. And you're not a professional engineer, are you?

A. I am not.

Q. Okay. Do you have any professional background in computer design?

A. I do not.

Q. Have you ever worked in designing computers at all?

A. I would say no.

Q. Have you. Are you currently or have you ever been enlisted in the military?

A. I have not.

Q. Have you ever personally been involved in a

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1 civil lawsuit, meaning you sued someone or they sued you
2 before?

3 A. No, I have not.

4 Q. Any other kinds of lawsuits? Arbitration,
5 mediation? Again, personal to you?

6 A. No. There was one time when the IRS had
7 questions about my tax return and it involved some
8 inheritances from my mother's estate. And it was a simple
9 calculation error, and I corrected that. That's it, that
10 I'm aware of.

11 Q. Okay. And then, as with your education, if you
12 could give me-- and I understand I've seen your CV, so I
13 understand I may be giving you quite a task, but if you
14 could give me a brief summary of your employment experience
15 from the time of your graduation from Purdue through
16 present.

17 A. So in the spring of 1986, I joined the faculty
18 at Department of Material Science at Iowa State University
19 as an assistant professor. And I began my research program
20 in battery research. And at the time, I was focused on what
21 we call solid electrolytes, as opposed to the flammable
22 liquid electrolytes, that of the kind that was involved in
23 the batteries that were in the HP computer. My work has
24 been for a lifetime involving solid electrolytes that don't
25 catch fire. Specifically, I'm trying to avoid the problem

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1 full professor at Iowa State University in recognition of
2 those achievements. Continuing that research, now the
3 United States started funding actual battery research. And
4 so I was able to take my basic science studies of battery
5 materials and now start actually using those materials to
6 assemble full batteries and testing full batteries in my
7 research and published a number of articles on battery
8 testing of materials and battery testing of full cells. In
9 I believe it's 2006, I was awarded university professors
10 rank, the second highest rank at the university. And that
11 was in respect to my significant and prolific, and I'll dare
12 say excellent teaching record in my curriculum. And then in
13 2006, 2009-- I'm sorry, 2009 I was elevated to the highest
14 rank of distinguished professor at Iowa State University for
15 my many, many accomplishments in research, international
16 collaborations, international recognition. And that like, I
17 will say that in the now almost 174 years that Iowa State
18 has been a university, I'm only one of two professors that
19 hold all those five ranks; assistant professor, associate
20 professor, full professor, university professor, and
21 Distinguished Professor. It's a very rare accomplishment,
22 of course. I then after being-- to come distinguished
23 professor, then the United States really started doing
24 significant funding of battery research and I was able to
25 expand my research significantly in battery research. And

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1 of batteries catching fire. I conducted that research as
2 assistant professor, going to many international
3 conferences, going to many international schools on
4 batteries, battery research, solid electrolyte research, and
5 so forth. I taught courses in thermodynamics of materials,
6 heat flow characteristics. During my study, I also taught
7 the use of fires and combustions for heating, for heating
8 materials, and processing materials. So I've done a lot of
9 teaching on flames and fires and using those fires in
10 constructive ways to heat materials. Over that five years
11 that I was assistant professor, I accumulated a record of
12 excellence in research, and excellence in teaching and also
13 excellence in service to the university for that. Then I
14 was reviewed and then ultimately awarded promotion to
15 associate professor of Material Science and Engineering at
16 Iowa State in 1991. I then continued my research on battery
17 materials, battery systems in my associate professorship.
18 But now I broadened my interaction more internationally,
19 working with international companies, traveling
20 internationally to attend conferences, collaboration with
21 other battery laboratories and extensively did research in
22 battery, battery materials. I also published many, many
23 articles, attained significant multi millions of dollars of
24 research funding to support my students, graduated many PhD
25 students. And then in I believe 1996, I was promoted to

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1 as a result of that, I have three laboratories comprising
2 about 6,000 square feet, about \$5 million worth of building
3 space, and I have about \$3 million worth of research
4 equipment, fully dedicated and only focused on battery
5 research. I have graduated some 45 PhD students, hundreds
6 of undergraduate students, tens of Master's degree students.
7 Over that period, I've amassed about \$30 million of
8 extramural competitive research funding. And I have
9 mentored a number of postdoctoral research associates and
10 published more than 240 publications, given more than 250
11 international and national invited talks and as a result of
12 that have become recognized as a international scientist,
13 recognized science and test in solid electrolytes and
14 battery research. In summary, I have done a lot of work
15 over the years, not only in my research, but also consulting
16 as well. And that's I think a pretty good summary of my
17 record.

18 Q. Thank you. And I appreciate you synthesizing a
19 very lengthy body of work. So thank you for that, Dr.
20 Martin. And is it fair to say that you're currently
21 employed by the university?

22 A. That is correct. Yeah.

23 Q. Okay. And you're currently employed as
24 distinguished professor?

25 A. I am, that's correct.

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1 Q. And your consultancy is just in your own name
2 only?

3 A. That is correct.

4 Q. Okay. There's no corporate entity or anything?

5 A. Well, there is Steve W. Martin, LLC that I use.
6 I don't use it very often. Sometimes law firms prefer to
7 interact with that entity. Most prefer that just interact
8 with me directly.

9 Q. And again, I don't want to hear anything that,
10 you know, you, you said to Attorney Schwarz or he said to
11 you, but is it fair to say that he is in the majority and,
12 you know, interacted with directly in respect of engaging
13 you rather than the LLC?

14 A. That is correct. We've only interacted through
15 me directly.

16 Q. Okay. Have you ever worked in computer
17 manufacturing?

18 A. No, I've not.

19 Q. Okay. And would you say your professional
20 material science work is mostly in the research field?

21 A. No, I would say that it's about 50% research for
22 50% development.

23 Q. And what would you call work, like the work
24 you're doing in this case? Would it be research, would it
25 be development, would it be something else?

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1 A. So in this case, it's strictly consulting. It's
2 neither development nor research.

3 Q. Okay, so going back to my question from before,
4 would you say that your material science work is in the
5 research field, the development field, and the consulting
6 field?

7 A. Yes, those three things, among others I do in my
8 capacity as a professor at Iowa State.

9 Q. Okay, and what are the other things you would
10 do? I mean, you talked about some of them. Mentoring your
11 students, of course, grant applications. Is that what you
12 mean by other things?

13 A. Those include-- those are also things that I do
14 as a faculty member at Iowa State. There are many, many
15 others I do as well.

16 Q. Yeah, I mean, I understand you wear a lot of
17 hats, Dr. Martin. So I'm just trying to get to figure out--
18 maybe you can't answer the question, but I'm just trying to
19 figure out what, you know, what the bulk of your work is.
20 Is it research? Is it forensic, is it development? Is it
21 something else? Is it no particular thing occupies more of
22 your time than any other thing?

23 A. So I have, with my work at Iowa State, I have
24 three major categories of my effort, and those are called
25 scholarly work, they're called teaching, and the third is

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1 called service. And then beyond that, then I, you know,
2 would have my personal life, which would be unrelated to
3 this, and then I have consulting that I do, which of course
4 is related to them. So the four primary things I do under,
5 you might say Iowa State is the consulting, which I have to
6 report each year. Not in any detail, but I have to report
7 some aspects of my consulting activities, I have to report
8 on my service activities not only to Iowa State, but service
9 outside of Iowa State. I talked to local organizations and,
10 and other things about batteries. For example, I gave a
11 talk to the Ames Fishing Club about battery, battery safety,
12 battery fires and you're out on a boat and a battery catches
13 on fire. It's a very dangerous situation. So I talk about
14 that. And then teaching, I have a full teaching load. And
15 then my scholarly activities which involve the research and
16 development that I do.

17 Q. So is it, you know, again, this is just rough
18 estimates, but is it fair to say of those four things they
19 each take up a fourth of your working time?

20 A. No, they don't. The consulting I do mostly
21 after hours so that, you know, I do have a 40 hour job a
22 week job with Iowa State. However, for example, this period
23 that the university does recognize that consulting does take
24 time during the work hours and they, they allow me a certain
25 amount of time to do that in aggregate. And, but my, we

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1 call it my position responsibility statement. My PRS is 50%
2 scholarly activities, which is my research and development,
3 40% teaching and 10% on service.

4 Q. Okay, so that's the the division of your labor
5 and your 40-hour a week job at Iowa State. And then how
6 does that compare to the time you spend consulting? I guess
7 is my question.

8 A. It depends. For example, this week in
9 preparation for the deposition, I spend a significant amount
10 of time. Other weeks there's nothing to do. And so it ebbs
11 and flows as, as work develops. And it's hard to say
12 exactly on average how many hours I do spend a week. But
13 you know, it's five to ten hours per week that I'm spending,
14 you know, some weeks. Other weeks it's zero. So it's hard
15 to say. It varies a lot.

16 Q. Okay, that's very helpful. I mean, I think
17 hearing from you is that though the workload of your
18 consulting services is variable, generally your (inaudible)
19 are greater than-- significantly greater than your
20 consulting work. Is that fair to say?

21 A. That's correct? Yeah. This, my consulting is
22 not my primary job. That's correct.

23 Q. Okay. Do you have any professional background
24 in battery pack design?

25 A. I do not.

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Q. And how about in battery cell design?

A. Battery cell design? I design batteries every day and I make batteries every day.

Q. So could you tell me a little bit about that?

Is the design and manufacture of the batteries at Iowa State, is that for, strictly for scholarly purposes? Is it to develop patents for the university or is it for some other reason?

A. Both. We do very basic battery design and battery assembly and battery testing for very basic research. My research group and I do battery design and battery development and battery testing for patents and publications and also develop research proposals based upon that. But I also work with companies and we're designing battery materials and battery cells and testing those for companies. We don't sell any of the batteries that we make, but we do exchange materials. We send materials to laboratories all over the world and cells, battery cells, all over the world for them to test.

Q. Okay, so I'm trying to think of how-- there's a lot of interesting stuff there. I guess I'll start with the company. So what, what companies have you worked with in the last year in respect of testing battery materials and cells?

A. I can't say because I'm under a non destructive-

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- non disclosure agreement with them.

Q. Understood. And, again, as with the confidentiality of your communications with Mr. Schwarz, I don't intend to intrude on any agreements you have with your clients or anything like that, but can you tell me if it's a consumer battery manufacturer or a commercial battery manufacturer?

A. It's a startup company that ultimately will manufacture batteries for consumers.

Q. Okay. And is it lithium-ion batteries?

A. It is not lithium-ion. Lithium-ion is a very specific type of battery. It is not lithium-ion, no.

Q. Okay. And you said you've worked with some other companies testing battery materials and cells prior to this, this consumer entity. Can you tell me about any of those?

A. Those have been major companies, worldwide, companies that I've interacted with.

Q. And could you tell me some of those companies and some of the testing that you did?

A. I think I can. The biggest company I worked with was Motorola.

Q. So what was the testing you did for Motorola?

A. We were testing materials that we were making that they had some interest in.

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Q. And what were those materials?

A. The solid electrolytes that my research group works on.

Q. So those weren't lithium-ion either?

A. No, I, I don't work on lithium-ion battery research per se. We, we study them. But of course, in academic research, we're working on batteries beyond lithium-ion to solve the safety problems and energy density problems of lithium-ion.

Q. Okay. And then I think this, I think by answering these questions, you've kind of answered my next question when you stated your research group and you do battery development and design. Is it fair to say that it's the kind of development and design that you did for Motorola and this consumer entity that is working on solid electrolyte batteries?

A. It's-- that's part of it, yes.

Q. And what's the other part of that?

A. Well, we do work on lithium-ion battery materials, different types of anodes to make the battery safer, different types of cathodes to make the battery safer, and then different types of electrolytes to make the battery safer.

Q. So your testimony is that your research group and you do battery development design partly on solid

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electrolytes, but also partly on lithium-ion batteries concerning the application of different anodes, cathodes and electrolytes to try to improve battery safety.

A. That's correct. And in battery safety, improved battery capacity and battery lifetime and at the same time all reducing cost of the battery pack.

Q. Do you have any professional background in pack and cell manufacturing?

A. I don't have any experience in actual manufacturing large quantities in a consumer way, you might say, of, of battery-- batteries.

Q. And have you ever written any peer reviewed articles about notebook computers?

A. No, I don't believe I have.

Q. And I think you've adverted to this next question in your earlier testimony, but have you ever written peer reviewed articles about lithium-ion batteries?

A. Parts of many, many of my papers, probably hundreds of my papers have referred to, cited to, described lithium-ion batteries in the current state and reviewed their characteristics. Yes.

Q. But is it fair to say that those articles weren't about lithium-ion batteries? You just discussed them in respect of solid electrolytes or improvements to applications?

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1 A. That's a fair statement that we started with the
2 safety issues and capacity issues and lifetime issues,
3 described all of that in great detail, and then used that
4 background as a way to motivate and anticipate our research
5 on developing new types of what we call, all solid state
6 batteries. Yes.

7 Q. And have you ever been in a notebook computer
8 manufacturing facility?

9 A. I don't believe I have, no.

10 Q. Have you ever been in a battery manufacturing
11 facility?

12 A. Yes, I have been in a battery manufacturing
13 facility.

14 Q. And could you describe the circumstances of
15 that?

16 A. As I said, I'm working with a small startup
17 battery company and they're manufacturing batteries every
18 day.

19 Q. Okay. And, and would Motorola also-- would you
20 have seen a battery manufacturing facility for Motorola?

21 A. Yes.

22 Q. Okay. So I guess maybe taking the Motorola
23 example, so that you're not constrained, could you tell me a
24 little bit about, you know, when you did that, what were the
25 circumstances, what you saw?

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1 But, you know, it was a cell winding, it was the liquid
2 electrolyte infiltration. It was the tape casting of the
3 anode and cathode films, the winding of those, the insertion
4 of those into the cans, filling of the electrolyte, and then
5 capping them.

6 Q. Okay, and I think we talked about this a little
7 bit too, so forgive me, but have you ever obtained any
8 patents in your name?

9 A. Yes, I have.

10 Q. Okay, and if so, what were those patents?

11 A. Believe there is seven. And they kind of fall
12 into two categories, what I would call glass materials and
13 battery materials. And I think there's like three patents
14 on glass materials, performance of glass, optical properties
15 of glass. Because the United States was not funding battery
16 research, although I, my first and foremost research area
17 was battery materials. I had to supplant my research
18 funding with other things that I could do to keep my
19 research group funding-- funded. And so I also worked on
20 optical materials. It turns out that the types of materials
21 I work on can also be used as optical material. So it was a
22 very good fit with my research group. So I've got a class
23 of patents that deal with the optical properties of, of
24 glass. In particular, it's the infrared transparency night
25 vision goggles. You might think of night vision lenses.

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1 A. It was a number of years ago, maybe as many as
2 15 to 20 years ago, when lithium-ion batteries were still
3 being developed, being improved, and it was in the greater
4 Chicago area. And there were two reasons for my visit.
5 One, they were recruiting me to lead their battery
6 manufacturing facility. They were wanting to grow their
7 business in North America and they needed an R&D research
8 and development director. And they interviewed me for that
9 position. In addition, we had been collaborating with
10 Motorola. One of my PhD students graduated from my research
11 group and went to work for Motorola. And this individual
12 then was, you might say, a liaison between my research
13 group, me and Motorola. And we were developing-- and that's
14 a research collaborative research project. So that if you
15 might say, if I wasn't given or did not accept-- if I
16 accepted, if I did not accept the research and development
17 director position, then we would continue and expand our
18 collaboration on battery development, lithium-ion battery
19 development.

20 Q. That's helpful, Doctor. Could you tell me a
21 little bit about what you saw, like what you observed in the
22 facility? I know it was, you said, 15 or 20 years ago.

23 A. It was a long time ago. And it was a standard
24 18650 lithium-ion battery cell production line. It was a
25 very quick tour, so we didn't spend a lot of time on it.

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1 The glasses that I work on for batteries actually are also
2 infrared transparent. And you can use them as IR lenses.
3 You have to change the composition a little bit, but
4 they're, they're, they're similar. And then I have another
5 set of patents on fuel cell materials. Again, remember, I,
6 you know, United States was not funding battery research,
7 but fuel cells are kind of like a battery. And there was
8 some interest by the federal government in fuel cell work.
9 And again, I could tailor my glass, tailor my materials for
10 fuel cell applications. And we developed some electrolytes
11 for some separators for hydrogen, oxygen fuel cells. I
12 think I have a couple patents in that area. And then more
13 recently, with the United States government funding battery
14 research, I was able to, as I described earlier, expand my
15 battery research. And as such, I've been able to develop
16 patents on two classes of materials related to battery
17 materials. The battery material itself, the solid
18 electrolyte. But also those solid electrolytes, of course,
19 are made from stuff. And you have to either go buy the
20 stuff or you have to make it yourself. And in this field of
21 solid state batteries, where it's a new field, unlike
22 lithium-ion batteries, it's a very established technology.
23 All the starting materials, or many of the starting
24 materials that we use for these solid electrolytes are not,
25 not widely manufactured. And if they are manufactured,

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1 they're not, they're very expensive and, or they're not very
2 pure. So I also develop patents to make very pure, low cost
3 starting materials. I believe I have a couple patents on
4 those materials, on those materials and processes.

5 Q. Understood. Thank you, Dr. Martin. So is it
6 fair to say you don't have any patents that pertain
7 specifically to notebook computers?

8 A. That is correct.

9 Q. Okay. And is it fair to say you don't have any
10 that pertains specifically to lithium-ion batteries?

11 A. Of course, my patents, as I list and my papers
12 do, they start with lithium-ion lithium-ion batteries and
13 they describe the shortfalls, the safety problems, lithium-
14 ion batteries, and then use that in the specification to
15 describe the advantages of the materials that I'm making in
16 the solid state batteries I'm making. So the claims do not
17 have, are not related, do not describe advancements or
18 characteristics of lithium-ion batteries, but certainly the
19 specifications do.

20 Q. Understood. And, again, this is, I'm going
21 through this with my layman's eye scanning your list of
22 publications. Is it fair to say that the bulk of your
23 publications or most of your publications concern the
24 material science in respect of glass? Due to this, the
25 funding gap that we talked about?

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1 expert in human factors?

2 A. No, I'm not.

3 Q. Okay. And do you hold yourself out as an expert
4 in human factors?

5 A. No, I do not.

6 Q. Do you hold yourself out as an expert on product
7 warnings?

8 A. No, I do not.

9 Q. Have you ever been qualified in any court as an
10 expert in fire investigation?

11 A. I have not.

12 Q. Do you hold yourself out as an expert in fire
13 investigation?

14 A. That's a good question. I hope I am a very
15 expert in fires. I teach the use of fire. I teach the use
16 of combustion. Every year, multiple times per year, I use
17 gas fired furnaces and I can calculate the ultimate
18 temperature that a fire reaches. I can calculate the effect
19 of too much fuel on the temperature of a fire. I can
20 calculate the effect of too much oxidizer on the temperature
21 of fire. So in terms of fire, I teach and I conduct
22 research on fires and I use fires many, multiple times, you
23 know, per year in teaching my students. So in some sense,
24 yes, I am an expert on fires and using fires in the context
25 of my teaching and my research.

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1 A. Yeah, well, there's never really been a gap.

2 It's just been a, an increase in funding over periods of
3 time. But, you know, I would, I don't know if I would say
4 that's fair. I would say that nearly all of my publications
5 have two components, a research component and a development
6 part. Our, our work at Iowa State is the reason why I moved
7 from chemistry at Purdue to engineering at Iowa State is,
8 I'm much more interested in engineering and development. So
9 we use materials to develop other materials, other systems,
10 other batteries. So many of my papers are very basic
11 science. I agree with that. But many, many of my
12 publications are related to using basic science chemistry to
13 develop new materials and test new materials. So I would
14 say my work is more characteristic of research and
15 development.

16 Q. Okay. Yeah. And I'm not trying to misstate
17 anything in respect of your research. I'm just, you know,
18 scanning the titles. It appears to me that, you know, at
19 least half, maybe more, concern the material science in
20 respect of glass. Is that fair to say?

21 A. I would still say material science. And
22 engineering.

23 Q. And engineering in respect of glass. I
24 apologize that. That was your correction from before.
25 Okay. Have you ever been qualified in any court as an

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1 Q. That's a helpful clarification. So, Dr. Martin,
2 is it fair to say that while you have expertise in, in
3 respect of your scholarly work of the use of fire in
4 developing materials, that you're not a cause and origin
5 expert in respect of fires?

6 A. So it's true that when I teach fires, I have to
7 talk about the origin of the fire and the nature of the
8 fire, the combustibility of materials. When I talk about
9 the use of fire, I also have to talk about containing the
10 fire. You have to talk about what catches on fire, which
11 is, what would be a terrible way to contain a fire versus
12 what doesn't catch on fire. So I talk a lot about furnace
13 design and when I talk about furnace design, I have to teach
14 the students of temperatures, that temperature limits, that
15 they have to use. For example, our fire temperature is very
16 high, 2,000 degrees Fahrenheit or so. But that's inside the
17 furnace. But that temperature has to be reduced from 2000
18 degrees Celsius-- Fahrenheit, I'm sorry-- inside the furnace
19 to something below the spontaneous ignition temperature of
20 things outside the fire. Outside the furnace, I'm sorry.
21 So we talk about the use of insulation materials to slowly
22 take the temperature down from the very hot inside to the
23 cooler outside. And so when I'm talking about that, we have
24 to design the material so that that temperature drops below
25 the spontaneous combustion temperature of ordinary things

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1 that you would find in a workplace. So in that sense, I
 2 have to talk about the origin of possibility of things like
 3 paper and other woods and so forth catching on fire if the
 4 outside of the furnace is too hot. So that would be both
 5 the cause and origin of fires. So we have to do-- I have a
 6 whole laboratory session on students designing furnaces such
 7 that the outside temperature of that furnace is below the
 8 spontaneous combustion temperature of ordinary materials,
 9 because it has to be, otherwise it would not be usable in a
 10 workplace.

11 Q. Okay. So I understand, Dr. Martin, that you
 12 have scholarly expertise in using these gas fired furnaces,
 13 instructing your students how to use them to develop
 14 materials, instructing them on the properties of attenuating
 15 the heat using insulation. But my question to you is, and I
 16 understand that that all involves the causes and origins of
 17 fire, but my question to you is a little bit more specific.
 18 Would you hold yourself out as a fire cause and origin
 19 expert?

20 A. With respect to the kinds of fires that started
 21 in this house? No.

22 Q. Okay. And are you a mechanical engineer, sir?

23 A. I am not.

24 Q. Okay. Would you describe yourself as a thermal
 25 scientist?

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1 A. Yes.

2 Q. Okay. What's a thermal scientist?

3 A. Thermal scientist is like what I do. I teach
 4 the subject of thermal conductivity. How does heat go from
 5 one place to another place? I talk about and I teach and
 6 describe the different mechanisms of thermal transport,
 7 conduction, convection and radiation. A thermal scientist
 8 calculates and knows about the different thermal
 9 conductivities of materials and why those materials have
 10 different, different thermal conductivities. Why are metals
 11 more thermally conductive than insulators, for example? I
 12 also talk about the re-- the emissivity, the radiation, heat
 13 flow. I also talk about and teach thermal conductivities,
 14 heat capacities, all the aspects that are involved in
 15 thermal properties of materials.

16 Q. Okay. You described three types of
 17 thermoconductivity. What were those again?

18 A. So the first is conduction. That's where, like
 19 my hands, if this hand was colder and this hand was warmer,
 20 I bring them together, then there are close material
 21 contacts. Then the cold hand is going to get warmed up by
 22 the hot hand. Okay, so that is-- that is conduction. On
 23 the other hand, I could have a space heater sitting down at
 24 my feet, which I don't, but I could turn that on. It has a
 25 small little fan. By conduction, the heating element

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1 touches the air and warms the air out-- up, and then the
 2 air, the hot air, circulates in the room and warms up the
 3 room. So we call that convective type of heating. And that
 4 can be with a gas or like in the radiator of your car. It's
 5 the antifreeze, the fluid. And then finally, radiation is
 6 like the sun on a warm day. You can go outside, you can
 7 expose yourself to the sun, and there's light emanating from
 8 the sun, and that light emanate-- excuse me, impinges on you
 9 and warms you up.

10 Q. Okay, that's helpful, Dr. Martin. Thank you.
 11 Have you ever been the subject of a Daubert challenge in any
 12 of your cases?

13 A. Don't know what that is, so I must not have.
 14 No. Can you explain what a Daubert challenge is?

15 Q. Yeah, yeah. Daubert challenge would be a
 16 challenge to the admissibility of your opinions in a case.

17 A. So I don't know. It is true that sometimes,
 18 sometimes cases settle and I just get from the lawyers,
 19 pencils down, and I don't get any explanation of why I'm not
 20 involved, why the case settled or why anything like that.
 21 But I've had that occasionally when, when things must have
 22 settled, but I have not. I've not ever had an instance
 23 where something like a Daubert has been, I guess you would
 24 say, charged against me or something like that. No, not to
 25 my knowledge.

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1 Q. All right, that is helpful. Okay, so I'm going
 2 to turn to our next kind of bigger section. I don't know if
 3 you want to take a break now or if you want to go for
 4 another, you know, 30 minutes or so. It's up to you.

5 A. Good question. I think I'm okay for now. Okay,
 6 you are, if you'd like to take a break?

7 Q. Yeah, no, absolutely. I just thought this was a
 8 decent breaking point. But we'll come across plenty more.
 9 As you can see, we have a lot to go through, so I appreciate
 10 your bearing with me and bearing up. Okay, so I'm going to
 11 put on the screen a document I've marked as Exhibit 1, which
 12 is your expert disclosure in this case comprising the list--
 13 oh, excuse me-- let me just-- that's better. Okay, so I put
 14 on this expert disclosure that I've marked as Exhibit 1.
 15 And this comprises your report in this matter together with
 16 your list of-- with your CV here and list of references.

17 A. Okay.

18 Q. And I can page through this if you like. I sent
 19 it over to counsel this morning. My first question is, do
 20 you have this document?

21 A. Not in front of me, no.

22 Q. Okay, but you do have a copy of it?

23 A. Not on this computer, no.

24 Q. Okay. Based on what you're seeing here, Is this
 25 your October 14, 2024 report?

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1 A. I believe it is. I would call this my first
2 report, I think.

3 Q. Okay. Yeah, so that's very helpful, Dr. Martin.
4 That was literally my next question. I was going to say,
5 for our purposes, I'm going to refer to this as your initial
6 report and then will be the one we just identified as
7 October 14 '24. Is that okay?

8 A. That's correct, yes. Thank you.

9 Q. Okay. And I'm going to mark as exhibit to your
10 rebuttal report dated January 3, 2024. Do you see that?

11 A. I do.

12 Q. And as far as you can tell, is that your January
13 3, 2024 rebuttal report?

14 A. I believe it is, yes.

15 Q. Okay, so for our purposes, when I refer to your
16 rebuttal report, it's going to be this one, the one we've
17 identified as January 3, 2024 report, okay?

18 A. Sounds good.

19 Q. All right, take this down for a minute. Did you
20 do any work of any significance to your opinions that is not
21 reflected in your reports?

22 A. No, I don't believe I have.

23 Q. Okay. And did you incur any expenses of
24 significance that are not reflected in your billing records?

25 A. No, I don't believe so. This-- the period that

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1 this falls in, however, has not been billed yet, and I
2 presume it will be. But I would have occurred these last
3 month expenses, but I've not built those yet.

4 Q. And in respect to those expenses, what expenses
5 have you incurred other than fees for your time? What
6 expenses have you incurred in this case?

7 A. I misunderstood. That's all that I have. I
8 don't have any other expenses beyond time on this matter.

9 Q. Okay, so you have no incidental costs.

10 A. I don't believe there is, no.

11 Q. Like copying, printing?

12 A. No, there's not been any other costs. I don't.
13 Not that I'm aware of, no.

14 Q. Okay. All right, now I'm going to turn to
15 Exhibit A to your report, which is your CV. If can find it-
16 - okay. So I have up here your CV. It's 81 pages dated
17 September 2024. Is this your CV, Dr. Martin?

18 A. Date as of September 24th. And the current one
19 is changed of course, but yes.

20 Q. Understood. Okay. And we have here a list of
21 testimony beginning at page-- there's a little further here-
22 - okay, so we have a list of testimony that begins on page
23 73 and it continues, you'll see through page 75, is that
24 right?

25 A. Looks like it, yes.

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1 Q. Okay. And I can scroll through this if you need
2 to review it. Do you know how many of these cases you were--
3 - in how many of these cases you were engaged by the
4 plaintiff?

5 A. No, I can't remember that number.

6 Q. And do you know how many were for the defendant?

7 A. No, it-- I just have to say some were and some
8 weren't. I don't recall that there's any preponderance of
9 defendant versus plaintiff. It seems to be about equal, but
10 I don't have a number for that.

11 Q. Okay. And your list of testimony includes some
12 active matters, right?

13 A. I believe it does, yes.

14 Q. And that's in addition to this case?

15 A. That is correct, yes.

16 Q. That's that our case is the fourth one-- fourth
17 or fifth one down there?

18 A. Faraci Lange, yeah.

19 Q. Okay, so now turning back to page four of your
20 report, you talk about your prior court testimony. So you
21 say you were qualified as an expert and testified three
22 times at trial. Could you tell me about those trials?

23 A. So I'll start with the most recent and go
24 backwards if I can. So I believe the Quinn Emanuel LLC was
25 a patent infringement case involving lithium-ion batteries.

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1 And the particular-- there were three patents that ensued
2 and I had one, and that involved the chemistry composition
3 of that organic liquid electrolyte. Then the other time
4 going backwards in time, it was glass related. I don't
5 remember. We could look, I don't remember the law firm, but
6 it involved patent infringement and it was where there was a
7 patent describing how to use recycled glass and how to
8 recycle glass at lower cost so you could make glass more
9 cheaply. Prior to that, there was a-- not a patent
10 infringement case-- it was an International Trade Commission
11 case. I believe a company from China was importing a
12 chemical. It had tangentially patented ramifications. But
13 the main aspect was the Chinese were importing a chemical,
14 very high valued, very expensive chemical. But they were
15 identifying that-- they were misidentifying that chemical as
16 a low cost material, no more valuable than dirt at a few
17 dollars per kilogram. But in fact, the material that they
18 were importing was worth tens of thousands of dollars per
19 kilogram. And I was involved in identifying the composition
20 of that imported material and showing that in fact, yes,
21 it's a very high value material, not very low value
22 material. Prior to that, I also was in court on a issue
23 involving back in the day, baby food jars were made of
24 glass. Of course, glass sometimes fractures. Those pieces
25 were ending up-- those glass fracture pieces were ending up

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1 inside the baby jar. And then I believe this case involved
 2 an infant injury. Wasn't fatal, but it was a severe injury
 3 to the child caused by those glass fragments. And I was
 4 called in as a glass expert to identify the glass chip to
 5 show that it more likely than not was-- came from the
 6 factory that manufactured the glass baby jar. There may be
 7 others, but I think those. No, there was yet one more, more
 8 recent involving glass manufacturing and describing some
 9 aspects of batching the glass and batching the composition.
 10 And there was a computer program that one company had that
 11 another company had wanted to use and essentially stole the,
 12 the calculation of program to calculate batches. And the
 13 company, the big company was talking to the small company
 14 about licensing it, but in the end they just simply took the
 15 computer program and basically stole it and started using
 16 it. And the small company took them to court. And then we
 17 won that case. I won that case. The small company won that
 18 case. The company did in fact need to license that from the
 19 small company.

20 Q. Okay, that's, that's very helpful, Dr. Martin.
 21 It's interesting that you mentioned the trade when I, I
 22 interned for a judge on that court. So this was-- so that
 23 was an anti dumping case, basically?

24 A. I think that's correct. It was, the court was
 25 out in-- was it Denver? I believe it was Denver, Colorado.

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1 did violate the patent description, the patent claims of the
 2 US Company. Then also to show that, in fact, that
 3 formulation was actually being used in actual batteries and
 4 sold in the United States. So I was opining on the
 5 composition of liquid electrolytes, the organic liquid
 6 electrolyte, that flammable thing that catches on fire in
 7 batteries, and opining on the composition of that, the
 8 details of the composition, why the composition has-- is
 9 made up the way it is, why it is as flammable as it is, and
 10 that these additives were in fact present. And not only
 11 present, but present in a range of compositions that the
 12 patent claimed. And then I had to show that, in fact, the
 13 company was importing batteries that had that electrolyte of
 14 that specific composition inside it.

15 Q. And what was the application of those batteries?
 16 Were they 18650 cells? Were they, you know, EV batteries?

17 A. They were 18650s used for laptops and other
 18 small electronic devices.

19 Q. And do you know if the 18650s that were at issue
 20 in that case were used in any notebook computers?

21 A. In general, yes. We were told that the
 22 batteries were coming from laptops and other portable
 23 electronic devices.

24 Q. And do you know-- you were told generally that
 25 they were coming from laptops and portable electronic

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1 And involving molybdenum. Molybdenum disulfide was the
 2 material being brought in.

3 Q. So the Quinn Emanuel case was the case, among
 4 the cases that you mentioned in which you, you testified at
 5 trial, the Quinn Emanuel case was the only one that involved
 6 lithium-ion batteries?

7 A. That went to court, yes.

8 Q. It went to trial.

9 A. Yeah, it went to trial.

10 Q. Okay. And could you tell me a little bit more
 11 about that case? Like what, what products were involved?
 12 You know, what testimony you offered, or just generally,
 13 what was the subject matter of your testimony?

14 A. Yes, so it was involving in fact two Chinese
 15 manufacturers. One was in the United States already
 16 manufacturing batteries, I believe, and one was outside the
 17 United States manufacturing batteries, but importing those
 18 batteries. And the, if I get this right, the company inside
 19 the United States, which of course we would have jurisdiction
 20 -- jurisdiction over, was charging the company outside the
 21 United States with importing batteries that contained a
 22 liquid electrolyte formula that the inside United States US
 23 Company had patented. And my role in that was to do two
 24 things. One, show that, in fact, the electrolyte
 25 formulation that the Chinese company was importing in fact

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1 devices, but were you given any specific brands, makes,
 2 models, anything like that?

3 A. It's possible we were. I don't remember in
 4 detail.

5 Q. And this was the most recent case, right? This
 6 Quinn Emanuel one? It was your most recent trial case?

7 A. That most recent in trial, yes.

8 Q. Okay. Do you remember what year that was?

9 A. I think it was in 2024. I think it was in
 10 January because it was down in the Western District of
 11 Texas. I was actually on sabbatical in England at the time
 12 and was told that the case would go to trial in January, but
 13 the end of January, more likely in February. So I set up to
 14 be gone to England to work with a battery research group, a
 15 lithium-ion battery research group in England. And then for
 16 some reason, I don't recall why, the case was moved up two
 17 full weeks. And actually I had to come home from England
 18 early to get ready for their trial. So it was January.

19 Q. Okay. And I can tell you that all of us lawyers
 20 apologize for what we put you guys through. You know, it's
 21 true. We do it all the time. We just say pencils down you
 22 never know. That's it. Or that trial is two weeks early.
 23 Come home from England.

24 A. Yeah, that's the way it was. That's the way it
 25 was.

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1 Q. Okay, so you, so you don't remember what brands
2 were involved in that case, but you may have been told at
3 some point.

4 A. That's true. And we could look through my
5 records, I could look through my records some-- it's a very,
6 well, you know-- I don't have records anymore. Of course
7 I'm asked to delete them all. So we'd have to go back to
8 the law firm and I could direct you to the law firm to see
9 whether or not that information, either one, was provided
10 and two, if they still have that information.

11 Q. I'm just going to mention a couple of notebook
12 manufacturers and just tell me if you think that any of
13 these were in this case if the 18650s in this '24 case were
14 involved. So Lenovo?

15 A. That sounds familiar. It really does.

16 Q. Apple?

17 A. No.

18 Q. ASUS?

19 A. Possibly.

20 Q. Acer?

21 A. No, I don't believe so.

22 Q. HP?

23 A. Yes. I believe so.

24 Q. Dell.

25 A. Possibly, Yes.

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1 going. It's where they were-- yeah-- there we go. Norand
2 Corporation, Cedar Rapids, Iowa. So they-- these are
3 handheld computer devices that the UPS drivers, FedEx
4 drivers used to use. Now, I suppose they use their cell
5 phones. And they were-- the drivers were finding that the
6 touch screens were failing very, very easily and very
7 quickly. And so, of course, they use, at that time, a
8 lithium-ion battery to power them and-- but my project was
9 related to the failure of the glass on the laptop, not the
10 actual battery.

11 Q. Okay, so in terms of notebook computers,
12 specifically, the only one that might have been is this
13 Liabo one?

14 A. That's correct. And it was related just to the
15 battery, perhaps. Just like this case is related just to
16 the battery. Yeah.

17 Q. Okay. And do you remember the manufacturer in
18 that case?

19 A. Of the battery?

20 Q. Or the notebook?

21 A. No, I do not.

22 Q. Do you remember the manufacturer of the battery?

23 A. Which one are we talking about?

24 Q. In the Liabo law firm matter?

25 A. No, no I don't. The Norand one that was the

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1 Q. Have you ever been accused by a court of a lack
2 of rigor in your analysis with respect to an expert opinion?

3 A. Not to my knowledge. No.

4 Q. In your list of cases and I can bring it up for
5 you again if-- because I know you don't have it front of
6 you--

7 A. I don't. I don't.

8 Q. Let me do that. I apologize. Of course I
9 combined your, you know, the whole disclosure, so now my-- I
10 know that your list of testimony starts on page 73, but it's
11 not page 73 of my exhibit here, so I just got this queued up
12 and I'll put this back up. So here is the list of cases.
13 So we talked about your trial cases, are there among both
14 the completed and active matters-- do any of them other than
15 this case involve notebook computers?

16 A. I don't believe they do, except if you scroll
17 down. Let me find one. Yeah, you look at the Currie and
18 Liabo law firm, I believe those batteries were lithium-ion
19 batteries, but I can't recall what, you know, what the, what
20 the particular application for those are. But then further
21 down there is, I don't know if you call this a laptop
22 computer, let's call it a portable computer-- there's-- keep
23 going down. It's quite early on-- it was not a battery
24 problem, but it was a glass display problem. Let's see.
25 Boy, there's a lot of them, aren't there? Yeah. Keep

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1 manufacturer of the laptop, and they were manufacturing the
2 microelectronic system for that laptop. They were
3 manufacturing the laptop, and they were--

4 Q. The handheld component you mean?

5 A. Yes, yes.

6 Q. Where it has a little pen. And you, you know,
7 they would ask you to sign it. You got to press really
8 hard. And I'm sure that's why you were called into the
9 case.

10 A. That's where the glasses were failing. That's
11 right.

12 Q. Okay, makes sense. Yeah. Now they just snap a
13 picture and they're off.

14 A. That's it.

15 Q. Okay, so. So we talked about notebook
16 computers. Have you rendered any opinions in these cases
17 that concerned lithium-ion batteries other than this one?

18 A. I don't believe so, no. Well, I mean, the Quinn
19 Emanuel case was completely about lithium-ion batteries, and
20 I was on the witness stand two full days for that.

21 Q. Okay, so other than the Quinn Emanuel one that
22 we talked about, you haven't rendered any opinions in any
23 cases that involved lithium-ion batteries besides this?

24 A. Now, it is true I've worked on a number of cases
25 involving lithium-ion batteries, but they have settled out

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1 of court before they went to trial.

2 Q. And when I say render any opinions, Dr. Martin,
3 I want to clarify. I mean, like, writing a report like you
4 did in this case. Not necessarily like, you know, to trial
5 or anything. So does that change your answer as to whether
6 you rendered opinions in cases, any other cases involving
7 lithium-ion batteries besides this one and the Quinn
8 Emanuel case we talked about?

9 A. We'd have to look through all my cases here, but
10 nearly every case I offer, you know, I have a report of some
11 form that I am supplying to the law firm, and it may not go
12 any farther than the law firm, but most generally there are
13 reports involved. So I would say yes. Most of the cases
14 involve me writing report and submitting report to counsel.

15 Q. Okay, thank you, Dr. Martin. Yeah. The reason
16 I ask is because, you know, there's all different kinds of
17 experts and, you know, some people consult on a lot of cases
18 and, and serve mostly in that capacity, and some people
19 always write reports. It sounds like you're in the latter
20 category, fair to say.

21 A. Yeah, I write a lot of reports, yes.

22 Q. Okay. Did any of these cases in which you, you
23 rendered a formal opinion in a report, did they involve
24 fires?

25 A. Fires involving lithium-ion batteries or fires

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1 than this one that involved a fire in which you rendered a
2 formal opinion?

3 A. I believe that's the only other case that I've
4 dealt with involving fires, yes. So in that case I had to
5 talk about the flammability of materials, the ignition
6 temperatures of materials. What materials don't catch on
7 fire, what materials do catch on fire and what their
8 ignition temperatures are. I had to do laboratory
9 experiments to show that, in fact, there were low cost
10 alternatives that are non-flammable plastics they could have
11 used that would have raised the cost of the twenty-nine
12 dollar humidifier, to by five cents or ten cents or
13 something very, very minimal. I had to investigate how the
14 fire started in terms of ignition of the material. And I
15 also had to show that, in fact, the fire did start in that
16 unit to supplant the testimony, of course, of the fire
17 investigators himself.

18 Q. Okay. And what was the thermoconductive
19 mechanism in that fire?

20 A. So-

21 Q. -If I'm not asking the question right, and
22 apologies for interrupting, I'm just phrasing it as best I
23 can.

24 A. That's fine. I think I understand you're asking
25 how did the fire start, basically. So, unlike modern, more--

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1 in general?

2 Q. Fires generally first and then--

3 A. Yes, yes. One of the cases was also a tragic
4 fatality caused by material failure leading to fire, but in
5 a house, in fact, in a trailer home house, very similar to
6 this matter.

7 Q. And could you tell me about that case?

8 A. So you'd have to look through my list to find
9 it. Very, very sad case. A child, 2 or 3 years old was
10 having respiratory problems arising from a cold. We think
11 the mother put a room humidifier into the room so that-- it
12 was a winter time to make the air more moist so the child
13 could breathe more easily. The humidifier, of course, ran
14 all night. The child was an infant, slept through that and
15 then died and became empty because of the lack of safety
16 protocols employed by the manufacturer. There was a failure
17 in the unit to shut off when the water had evaporated. The
18 heater just kept right on heating. The thermal switch
19 wasn't operable, caught the humidifier on fire. And then
20 there were some other nasty things I won't describe, but the
21 end result was that caused the humidifier to catch on fire,
22 which caused the desk and papers that were near it to catch
23 on fire, which caused the room to catch on fire, which
24 ultimately led to the death of the child.

25 Q. Okay, so that was the, the one other case, other

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1 newer humidifiers that use ultrasonic sound to vaporize
2 water molecules, so they call them cool mist. This was what
3 you might call the older fashion where it had a heating
4 element at a round heating element very similar to a heating
5 element you'd find in your stove or you'd find another
6 heating appliance. And that was contained in metal. And
7 that metal then came in contact with water. But it was, but
8 of course, it was surrounded by plastic. The humidifier was
9 made of flammable polyethylene? Yes. And when-- so long as
10 the humidifier has water in it, well, then that water, of
11 course, boils. And the temperature really can't rise
12 anything above 100 degrees Celsius because the water is
13 consuming that heat to turn it into a vapor. But as soon as
14 the water evaporates, which happened in this case, in this
15 matter, then there's nothing to carry away that heat. So
16 that heat gets concentrated in the unit itself. And then
17 what happened was there was a plastic, really terrible
18 design. There was a plastic connector that separated and
19 held the metal piece to the remaining plastic. And when
20 that metal piece failed, when that plastic piece failed, of
21 course that melted. And then that allowed the, the hot
22 metal to fall and then become in direct contact with the
23 plastic base plate of the humidifier. And then through
24 conduction, that case, it was thermal conduction. The hot
25 metal heater was then in direct contact with the plastic of

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1 the humidifier. And then that just reached the spontaneous
2 ignition point of polyethylene, couple hundred degrees
3 Celsius. And then that polyethylene caught on fire and then
4 became a plastic fire. And there's lots of smoke and yeah,
5 it then ended up burning down the trailer. The parents
6 couldn't get into the room and the child was lost.

7 Q. Understood. So, Dr. Martin, I understand that
8 the-- it was conduction which ignited the humidifier itself
9 into flames. But is there any-

10 A. All right. Sorry.

11 Q. No, no, please.

12 A. Sorry for interrupting you. Yes, in that
13 particular instance, there was no radiation heat flow, there
14 was no convection-- convective heat flow. There was heat
15 flow, there was convective heat flow when the water vapor
16 was coming out of the humidifier, but once that was gone,
17 then there was just conductive heat flow of the metal heater
18 in contact with the, the low temperature flammable plastic.

19 Q. Okay. And then once the polyethylene reached
20 its ignition point, what's the thermoconductive mechanism in
21 respect of igniting the rest of the room and the rest of the
22 home?

23 A. Yeah. So every material has an ignition point.
24 Some, some that's so high it's irrelevant. But most
25 plastics have relatively low ignition points, spontaneous

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1 happened was the heating element brought the sand brought
2 the plastic up to that ignition temperature. So now we, in
3 our thermal science language, we use the term RT. R is the
4 ideal gas constant. T is the temperature, the product of
5 the gas constant and the temperature gives an energy. And
6 the higher the temperature, the higher the T, the higher
7 that RT value, the higher the thermal energy. And that
8 thermal energy causes these molecules to get really, really,
9 really excited. And in the presence of oxygen, they get so
10 excited that they can chemically react. And then it reaches
11 this thermal runaway condition where that just
12 spontaneously, the hot plastic spontaneously reacts with
13 oxygen to form carbon dioxide and, and carbon-- just carbon
14 dioxide. And in the case of papers, that's what happens
15 too. Say the humidifier caught on fire. Then that heat
16 then, because it was on a desk and there were papers around,
17 that caused the paper to reach its spontaneous ignition
18 temperature. Because the RT, the R times now the
19 temperature of the flame caused by the humidifier that heat
20 caused the paper to reach its ignition temperature. Then it
21 caught on fire. Well then the papers caught on fire. Then
22 the temperature got hotter. Well then the wood that it was
23 sitting on that reached its ignition temperature and then
24 the wood started catching on fire. Then the fire was very
25 spontaneous and it consumed the room and then ultimately

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1 ignition points. Now this is in the context of a room
2 filled with air. If the room is not in air, it's a vacuum,
3 or there's no air, pure nitrogen, then there's no oxidizer
4 present. And so in this case, it was oxygen from the air.
5 And all plastics have ignition points just like wood does.
6 When you get wood hot enough then the fibers of the wood,
7 the plastic materials in this case, when you get them hot
8 enough, they're surrounded by oxygen. And there's a
9 chemical reaction that, that carbon plus oxygen equals
10 carbon dioxide. And there's what's called an activation
11 energy. We use paper all the time. It does not
12 spontaneously combust, but it thermodynamically can because
13 carbon plus oxygen is a more stable molecule, carbon dioxide
14 than carbon or oxygen separately. But there is what we call
15 an activation energy barrier. It's kind of like when you go
16 sled riding. You gotta, the rails stick a little bit and
17 then you gotta push it a little bit to get going down the
18 hill, you might say. But once you get going down the hill,
19 you know, you're down the hill. Ignition combustion has
20 that same thing. There's an energy barrier that you need
21 that the materials must get over before they, they
22 spontaneously combust. And, you know, like thermal runaway
23 of a battery, there's a temperature that must get to before
24 it spontaneously ignites. And in this case, each material,
25 each plastic, has an ignition temperature in air. And what

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1 consumed the house.

2 Q. So Dr. Martin, is it with that last recitation
3 that you had of how each item in turn caused the items
4 around it to reach the ignition temperature, are you saying
5 that the thermal conductor mechanism was conduction for each
6 of these? Right. So the, the hot coil caused the
7 humidifier itself to ignite by conduction. The humidifier,
8 once ignited, caused the desk, the papers around it to
9 ignite by way of conduction and so on and so forth. Is that
10 fair to say?

11 A. No.

12 Q. Okay, what, what am I missing?

13 A. So the first event was conduction. That was
14 where the metal was in contact with the plastic. Well then,
15 then fire, that's a gas phase, right? That's a plasma.
16 It's a mixture of gas molecules, very hot gas molecules, and
17 actually ions. So we call fire a plasma. We don't really
18 call it a gas. Well then that fire, that gas phase, right?
19 We don't talk about conduction of, of that. So that, that
20 fire convectively heated up the surroundings, right? It's a
21 blazing fire and that convectively heated up the
22 surroundings. But also in addition to that, there's
23 radiation. Now, the fire is self propagating, it's very
24 hot. It's, it's a bright light. And that light is also
25 shining on other things around and that also causes the

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1 object, objects to catch on fire. So once the fire starts,
2 then all three mechanisms can be active in propagating the
3 fire.

4 Q. That's helpful, Dr. Martin. Okay, so again,
5 cognizant that this is the September 2024 copy of your CV
6 here, is there anything in your CV as you sit here today
7 that's either inaccurate or incorrect that you'd like to
8 alert us to. Again, this September 24th CV, understanding
9 that there may be updates since then.

10 A. There's no major errors. Of course, there's a
11 lot of stuff in there. Could be minor errors of a date being
12 slightly wrong or a month being slightly wrong, but I don't
13 believe there is any errors in this document. No.

14 Q. Okay.

15 A. Major errors in this document.

16 Q. Understood.

17 A. There's always errors in everything.

18 Q. Of course. And I'm, you know, Ms. Belmonte asked
19 us to put in our appearances because I did not get her the
20 caption, so I'm well familiar. Now, is there anything you
21 consider of import or significance to the opinions you
22 rendered in this case that is not in your CV?

23 A. Well, yes. I mean, I don't quite understand
24 your question. My reports don't depend upon my CV really in
25 any significant way. So there's lots of things in my

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1 reports that are not in my CV. The CV reflects my
2 collective activities over nearly 40 years as a faculty
3 member, showing the depth and breadth of my expertise and
4 areas, specifically the lithium-ion batteries, but many
5 other areas. But I don't believe there'd be anything in my
6 CV that would directly end up in my report, if that's what
7 your question is. This is a document just summarizing my
8 career and my knowledge in the general areas that the CV
9 describes.

10 Q. Okay. And I think in your answer, you got at
11 the perhaps inartful phrasing that I used. What I mean to
12 ask is, is there any sort of, you know, unique certification
13 or training or professional experience that you have that's
14 not listed in your CV that you did bring to bear in this
15 case, or, you know, referred to, relied on, etc? Does that
16 make sense?

17 A. Yeah. Well, it is true. We faculty members
18 are. I'll just say it. We're pretty smart people. And so
19 we learn constantly, and we're learning constantly. So
20 we're always learning and always applying new knowledge and
21 new applications. And so I think that is a general aspect
22 that probably isn't in my CV that is reflective of my work
23 on all my cases. I learn in detail the specific case, and I
24 apply my knowledge and background to that specific case and
25 in the process learn new things about materials and

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1 batteries in particular.

2 Q. Understood. I guess a better way to say it is
3 you testified earlier that you weren't a professional
4 engineer, right?

5 A. I do not have a professional engineer
6 registration. That's correct.

7 Q. Okay. So I'm asking about something like that.
8 Like, let's say, hypothetically, you were, in fact licensed
9 as a professional engineer and it was not included on your
10 CV, and you had relied on your knowledge as a professional
11 engineer and reaching some of your conclusions. I'm asking
12 about something like that, something that may have-- may be
13 relevant in your professional life to these opinions that
14 you reached, but for some reason or another is not included
15 here. I mean, it appears exhaustive, but I have to ask.

16 A. Yeah, I think that's right. I think this is
17 exhaustive of the major activities of my career, and
18 probably everything that's relevant to this case is in some
19 way described in my CV.

20 Q. Thank you, Dr. Martin. So how much have you
21 billed to date on this file, again with the caveat that you
22 don't have the last month in?

23 A. I don't know. It's been going on quite a while.
24 I bill infrequently. We can look that up. Counsel can
25 provide that number, I presume. I could give you a rough

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1 number, I guess, if that would be helpful.

2 Q. Yeah, you know, if you happen to have a-- you
3 know, an idea. If it's 5,000, 10,000, 20,000, less, more.
4 You know?

5 A. I can't give you a number like that, but I
6 probably could give you a range. I would guess it falls
7 between 5,000 and 20,000. It's in that range. It's
8 probably, you know, in that range somewhere.

9 Q. Okay. And how many hours have you worked on
10 this matter?

11 A. Whatever those hours are, whatever the bill is
12 divided by my hourly rate. I don't know, it's probably 30
13 to 40, maybe? It's a range. Again, probably more than 20,
14 but less than 50, less than 100, something like that.

15 Q. Okay. Do you know when the complaint was filed
16 in this case?

17 A. I don't, off the top of my head, no.

18 Q. Okay. And do you remember when you started work
19 on this case?

20 A. Well, it'll be-- if you flip up a couple of
21 pages on my CV, it'll state, I don't know. I think it was
22 in '23, but I'm not sure. I don't believe it was just last
23 year, '24. I think it's a little longer than that, but I
24 don't believe it's 2020 either. It'll be listed in my
25 active ones.

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1 Q. So March '23?

2 A. That's what I have down, yes.

3 Q. So that's when you would have opened your file?

4 A. That's when I would have signed the agreement to
5 be engaged in the project, yes.

6 Q. Okay. And then you kind of answered my next
7 question as well. But how was it that you came to be
8 retained by Attorney Schwarz. Again, not disclosing the
9 context, the actual substance of any communications you had
10 with them.

11 A. I believe they reached out to me directly. I
12 can tell that because I do remember my billings. This is
13 how I remember whether I was contracted directly or not. In
14 cases where I'm contacted directly, I send my invoices to
15 the law firm directly. Other times firms, consultancy firms
16 will reach out to me on behalf of agencies, and then I send
17 my invoices to that consultancy firm. But in this case, I
18 send my invoices directly to Faraci Lange, and that means
19 they reached out to me directly.

20 Q. Thank you, Dr. Martin. I think now's a good
21 time for a break. We've been going for an hour and 45
22 minutes. So if we could come back at noon, we will pick up
23 where we left off.

24 A. Come back in 15 minutes. I'm an hour behind
25 you. Right?

1 Q. Oh, I apologize, Dr. Martin. Yes. 15 minutes.
2 Thank you.

3 (Whereupon, a brief recess was taken.)

4 (Back on the record.)

5 EXAMINATION

6 BY MR.LEVITES:

7 Q. So, Dr. Martin, have you worked with Mr.
8 Schwarz or the firm, or his firm, Faraci and Lange,
9 previously to this case?

10 A. I don't believe so, no.

11 Q. Okay, so we marked as Exhibit 1 your initial
12 report, dated October 14, 2024, and your rebuttal report,
13 dated January 3, 2024, as Exhibit 2. Are there any other
14 reports out there that set forth any opinions or findings
15 that are supplemental to or different from these reports?

16 A. No.

17 Q. Okay, turning through to pages-- boy, I have the
18 pages mixed up-- so turning the page, I guess it's on 21
19 through 25. There's section X is entitled Opinions and
20 Basis of Opinions, and there are subsections A through F
21 setting forth those opinions. My question for you, Dr.
22 Martin, is, is it fair to say that these six items, A
23 through F, represent a summary of your opinions in this
24 case?

25 A. I think they are a summary of my opinions as of

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1 the-- is this October? Of this report. I think the rebuttal
2 report has also findings and opinions in it as well. Maybe
3 not set out like this, but I think there are other opinions
4 in the rebuttal report.

5 Q. Okay. And we'll get to the rebuttal report as
6 well. But I think I'm hearing you say that the six findings
7 listed in A through F, together with the findings in your
8 rebuttal report represent a summary of your opinions in the
9 case. Is that fair to say?

10 A. That's correct, yes.

11 Q. Okay. Do you have any opinions of significance
12 that are not set forth on these pages 20 to 25 in your
13 initial report or within your rebuttal report?

14 A. No, I don't.

15 Q. Did you do any work of significance in reaching
16 your opinions in pages 20 through 25 of your initial report
17 or the opinions in your rebuttal report that are not
18 reflected in those reports?

19 A. I don't believe so, no.

20 Q. We talked about expenses, and you said you
21 hadn't incurred any expenses of significance that were not
22 reflected in your records. Is that right, Dr. Martin?

23 A. Yeah. You have to ask me a question. Though
24 there are no significant or even any expenses that I built
25 other than my time.

1 Q. Okay. So as an initial matter, you understand
2 that the notebook at issue in this case was an HP Pavilion
3 DV6, correct?

4 A. That is correct.

5 Q. So for ease of reference, today, when I refer to
6 the Pavilion, I'm referring to the Pavilion DV6. Is that
7 okay?

8 A. That's fine, yes.

9 Q. And when I refer to the specific notebook, the
10 subject notebook that Ms. Marcellin had, I'm going to call
11 that the Marcellin notebook. Is that okay?

12 A. That is fine, yes.

13 Q. Okay. So with respect to the Marcellin
14 notebook, do you know when it was manufactured?

15 A. I don't know when it was manufactured. It
16 probably is in a report, but I don't know when it was
17 manufactured. I believe I only know when she acquired it.

18 Q. Okay. And the materials you reviewed are listed
19 in Exhibit B to your report, your original report here?

20 A. Yes.

21 Q. Okay. Is there anything you reviewed in
22 preparation of your initial report that is not referenced
23 here in Exhibit B?

24 A. No.

25 Q. So in respect of the date of manufacturer of the

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1 notebook, if I represent to you, sir, that it was
2 manufactured in December 2010, does that sound about right
3 to you?

4 A. I think the 2010 time period sounds right.
5 That's correct, yes.

6 Q. Okay. And you would agree with me, sir, would
7 you not that if it was manufactured in 2010, that the
8 process of planning and designing the Pavilion would have
9 occurred at some time before December 2010? Right?

10 A. Yes, of course.

11 Q. Would you agree that would mean the Pavilion
12 itself was probably planned and designed sometime in 2009 or
13 2008?

14 A. I can't speculate on that, no.

15 Q. Would you say it was before 2010?

16 A. I can say it was before 2010. That's correct.

17 Q. Okay, so it could have been 2009?

18 A. It could have been, yes.

19 Q. Okay. How long--are you familiar with the
20 typical, you know, design timeline for a notebook like this?

21 A. No, I am not.

22 Q. But you are with respect to battery packs for
23 notebooks?

24 A. I have some more general familiarity with
25 battery packs and their design times, yes.

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1 of the parts and generally just surveyed all that was
2 contained in the container that was shipped to me.

3 Q. And what observations did you make at that time?

4 A. Well, I think they're-- I described in my
5 report. I don't know that I would go offhand and just say
6 generally what they were. I think all the relevant
7 observations that I made of the laptop are described in my
8 report.

9 Q. Do you remember as you sit here today, what you
10 observed in 2024 when you examined the laptop?

11 A. Well, yes, I believe I concluded that the
12 battery pack had, in fact, the batteries inside the battery
13 pack had in fact, ignited. Some had exploded, some had not,
14 I believe, and I generally noted the fire damage to the
15 laptop and the case of the laptop and the various parts of
16 the laptop.

17 Q. And who was present at the time of your
18 examination other than you?

19 A. Nobody.

20 Q. And what else did you do, generally speaking, in
21 the process of rendering your opinions set forth in your
22 initial and rebuttal report?

23 A. No, I think whatever it is that I did is, as
24 I've described it in my report and I think I'll leave it at
25 that. The report describes the findings and the

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1 Q. Okay. At page 16 in your report, you stated
2 that you personally examined the Marcellin notebook. I can
3 pull that up for you. Somewhere here-- Oh yeah, "I
4 personally examined"-- when did that examination take place?

5 A. Over a period of time since I just-- since I
6 received it and even as late as yesterday.

7 Q. So since you received it, does that mean that
8 counsel provided you with the Marcellin notebook?

9 A. Yes, it is locked in my office at Iowa State and
10 has been there ever since.

11 Q. And did you get it shortly after being engaged
12 in March '23 or at some other time?

13 A. Much later? Only recently. I don't know when,
14 we could look at the shipping records of it, but I don't
15 remember exactly when. I'm pretty sure it'd be sometime in
16 2024.

17 Q. Okay, so you examined the notebook at your
18 offices in Iowa State.

19 A. That's correct.

20 Q. And what did you do during that examination?

21 A. Well, I unpacked it. There are a number of
22 packages containing other parts from the battery, other
23 parts from the laptop. I took a number of photos that I
24 think perhaps I included in this report, but also in my
25 rebuttal report. I took some mental notes of the condition

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1 observations and my opinions as they relate to this matter
2 in my report.

3 Q. But as you sit here today, I mean, you remember
4 visually examining it. We talked about that. Was there
5 anything else that you did?

6 A. Yes, I mean, as I've said before, I took mental
7 notes of the status of all the components. I took a mental
8 note of comparing what was on the list, the bill of goods,
9 you might call it, the shipping list. They were all
10 identified. And I compared that shipping list versus the--
11 against the items that I found inside the box and I just
12 reviewed all the different components that were present.

13 Q. So when you, when you say the shipping list, do
14 you mean the shipping list from counsel or the kind of bill
15 of material materials for the actual notebook?

16 A. No, it's not a bill of materials for the
17 manufacturer of the laptop. It was a list of the items.
18 And I don't know, I'd have to go back and look at the list.
19 It was a list of the items that were included in the
20 shipping container that was shipped to me, I presume. Of
21 course, it's very important to have a trail of history, for
22 the lack of better words, I don't know what the legal term
23 is, but there's a trail of history to make sure that nothing
24 gets lost and everything is accounted for. And I don't know
25 who generated that list, but there was a list of what was to

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1 be found inside the container.

2 Q. Okay. Did you perform any tests?

3 A. Yes, of course, visual tests. Visual
4 examination of the various components. I have a little USB
5 microscope, we call it kind of a tabletop microscope that I
6 use to look at the various components. And yeah, I just
7 generally investigated and looked at the laptop.

8 Q. Were there any other tests that you performed?

9 A. I don't believe so, no.

10 Q. And did you review any CT scans?

11 A. I did. There was one-- there was one CT scan
12 that I believe I've included in my report or I have seen in
13 other reports of the-- what might be called the computer
14 part of the laptop, not the screen part, but there was a CT
15 of the laptop computer part.

16 Q. And did you review any x-rays?

17 A. I believe I did. There was another x-ray--
18 there were x-rays provided probably of the laptop. And then
19 there's also, I recall there were some x-rays of various
20 electrical components. I think they were circuit breakers
21 in the house either to show that they were on, show that
22 they were off, and show that they were working properly.

23 Q. Are you familiar with Linden's Handbook of
24 Batteries?

25 A. I have a copy of Linden's Handbook of Batteries.

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1 Q. What is it?

2 A. It's a compilation of, a summary of-- it's a 900
3 or more page book-- it's a summary of nearly all battery
4 chemistries, the histories of batteries, the histories of
5 different kinds of batteries, and then a very long summary
6 of nearly all aspects of batteries.

7 Q. Have you reviewed the chapter Methodologies for
8 Battery Failure Analysis in Linden's?

9 A. I don't believe I have, no. I would have read
10 that. I would have reviewed it generally, and I'm fairly
11 familiar with the textbook, but I don't believe that I
12 reviewed it in great detail.

13 Q. Do you know what the procedures set forth in
14 that chapter are for the methodologies that is, for battery
15 failure analysis generally?

16 A. Not that are described in that particular
17 chapter? No.

18 Q. At page six in your report, you stated that the
19 laptop battery pack was not the original battery pack
20 contained in the computer at the time it was purchased, and
21 it appears to be an unauthorized or counterfeit battery
22 pack. My question is, sir, how did you come to that
23 conclusion?

24 A. Can you show me that in my report, please?

25 Q. Yeah, absolutely.

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1 A. Thank you.

2 Q. Can you see that, Dr. Martin?

3 A. Yes, yes.

4 Q. So my question was, how did you come to this
5 conclusion?

6 A. That it was a preponderance of evidence provided
7 to me in the various reports I believe that I've cited in my
8 report, that determined that in fact this was not a original
9 battery for the laptop.

10 Q. What is a counterfeit battery pack, Dr. Martin?

11 A. Well, there's a couple of different definitions
12 of that, of course. Maybe I'll start with the simplest one.
13 The non-counterfeit battery is a battery been approved by
14 the manufacturer, approved by that, and the company has
15 tested it, has examined it, has qualified it through its
16 many specifications and many requirements. HP has such a
17 battery specification for approved batteries that it uses in
18 its laptops. And then of course, a counterfeit battery is
19 the opposite of that. A battery that has not been approved
20 by the company, has not been inspected by the company, may
21 or may not meet all of the specification requirements, and
22 has not been rigorously investigated. Approved, you might
23 say, signed off by the company, the manufacturer that would
24 use that battery.

25 Q. Okay, so I think you kind of referenced this,

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1 but what would distinguish a counterfeit replacement battery
2 pack from a non authorized battery pack.

3 A. That's a very fine distinction. They're in the
4 same, in the sense, they're the kind of the same that an
5 unauthorized battery is a battery that has not been in a
6 sense authorized by the company that's using the battery, HP
7 in this case, and however that unauthorized battery may in
8 fact be, you know, you could say identical in all cases to
9 an off quote, authentic battery. I think the term
10 counterfeit, although I don't, I will not say this is a
11 definitive statement, but in general, the concept of a
12 counterfeit battery is assigned to more of an inferior
13 battery. It may function, but it may not have all of the
14 safety features, all of the characteristics, all the
15 specifications that the battery that is fully authorized by
16 the company. So I think the counterfeit battery has a, an
17 implication of inferior quality, subpar quality to it, that
18 an unauthorized battery could be one that's perfectly
19 identical, but yet has not been fully authenticated by the
20 company, in this case HP that would use that battery.

21 Q. And might another distinction be the use of the
22 HP mark?

23 A. Yes and no. A counterfeit battery certainly can
24 have very sophisticated printers and they can print HP
25 labels just as well as HP can. An unauthorized battery can

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1 have or not have labels. I think that's a secondary
2 consideration.

3 Q. Okay. So at least as of the date of your
4 examination, sometime in 2024, you were aware that the cells
5 in the Marcellin notebook were not original to her HP
6 product. Correct?

7 A. Through the course of my work on this matter, I
8 have learned, yes, that this battery pack was not original
9 to the 2010 purchase of the Pavilion laptop. Yes.

10 Q. So you'd agree that at the time of the fire, the
11 computer was not in the configuration that was originally
12 sold to Ms. Marcellin?

13 A. The computer itself was. Of course, there was
14 no change to the computer that was unchanged.

15 Q. Would you consider the notebook battery to be
16 part of the notebook assembly?

17 A. I would consider a part of the total laptop, but
18 I would not consider it a part of the laptop itself per se.

19 Q. So would you agree that the total laptop was not
20 in the configuration originally sold to Ms. Marcellin at the
21 time of the fire?

22 A. That's correct. The assembly had a counterfeit
23 battery. The assembly of the laptop had a counterfeit
24 battery inside of it.

25 Q. Do you know-- do you have any knowledge about

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1 alterations that might have been made to the Marcellin
2 notebook, the operating system software, the BIOS
3 configuration from the time it was made by HP to the time of
4 the fire?

5 A. No, I have no recognition of that.

6 Q. Ms. Marcellin stated in her deposition that she
7 never replaced the battery, right?

8 A. That's my understanding. That's what she said.

9 Q. And if she didn't replace it, who did?

10 A. I have no idea.

11 Q. Did you ever ask her?

12 A. I have not had any personal communications with
13 Ms. Marcellin. No.

14 Q. Was there any reason you didn't ask her?

15 A. It's a delicate balance of working within my
16 boundaries, you might say, and I have a very narrow scope of
17 my work, and that is to focus solely on, in this particular
18 matter, it was to focus solely on the battery itself.
19 Whether the battery had safety characteristics to it and had
20 it-- did it have authentication characteristics to it, and
21 did the laptop itself have authentication characteristics to
22 it? So within the scope of my work, reaching out to Ms.
23 Marcellin would be beyond the scope of my work.

24 Q. Okay, so you didn't ask attorney Schwarz to
25 speak with Ms. Marcellin ever?

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1 A. I never asked attorney Schwarz to speak to Ms.
2 Marcellin about any questions I had. No, that's correct.

3 Q. Okay. Do you know if the Pavilion was UL
4 listed?

5 A. I think on the label, this-- like, I took a
6 photograph of the bottom of the laptop and the bottom of the
7 laptop-- we look at my, probably my rebuttal report-- I
8 think that, yes, that there was a UL listing label on that
9 particular sticker on the bottom, but I'm not absolutely
10 sure, but I think I recall that. It's my understanding, in
11 fact, I just went through this, that with my own purchase of
12 items at Iowa State, items like this require UL listing. So
13 it would be my expectation that it was UL listed. And it's
14 my memory that that UL listing was actually on that label.
15 But we could look and make sure. I just don't remember
16 exactly.

17 Q. Okay. And what is UL?

18 A. Underwriter Laboratories? They are a
19 laboratory, independent laboratory that qualifies a lot of
20 different things for primarily safety, but also for quality.
21 They are, for example, going back to the plastic case
22 involving the death of the infant, they qualify certain
23 plastics as flammable and certain plastics as unflammable.
24 And so I use the Underwriter Laboratories website and their
25 documents to pick out and qualify various non-flammable

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1 plastics that this humidifier could have been made of that
2 would have not, of course, caught on fire and would not have
3 resulted in the death of the infant.

4 Q. Do you know what UL standards govern consumer
5 electronics such as the Pavilion?

6 A. I don't know the specifics. Now, there are many
7 thousands of different characteristics that they would
8 cover.

9 Q. Do you know if the battery pack and or cells
10 that were originally shipped with the Pavilion were UL
11 listed?

12 A. We could look at a report that was made of the,
13 not the exact same model-- no, exact same model, but not the
14 exact same item. But the same model Pavilion and the same
15 model of battery pack that came with that. There was a
16 report that I believe I cite in my reports that did look at
17 that and it presumably has photographs of such labels that
18 may indicate whether that original battery pack would have
19 been UL listed. UL labeled.

20 Q. Okay. Do you know what UL standards govern
21 lithium-ion battery packs?

22 A. There are many.

23 Q. Have you read them?

24 A. I believe I've read a few of them. In the case
25 of the electrolyte, there are tests that UL describes, I

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1 believe, on the flammability temperatures, the ignition
2 temperatures of these liquid electrolytes. In the matter of
3 the case, when I did with a Quinn Emanuel case, I believe in
4 dealing with the liquid electrolyte case.

5 Q. Okay. What types of tests are done on battery
6 packs under the UL standards? The applicable UL standards.

7 A. I wouldn't be able to summarize nearly all, any
8 of the tests, many of the tests that they do.

9 Q. Okay. Do you know what UL standards govern
10 lithium-ion battery cells?

11 A. I'm sorry, you have to ask that question again,
12 please.

13 Q. Yeah, so I asked about. I asked you if you knew
14 which UL standards govern notebooks and then lithium-ion
15 battery packs. Now I'm asking about lithium-ion battery
16 cells. So do you know which UL standards govern those?

17 A. There are a number, but I don't know the details
18 of them. No.

19 Q. Okay-

20 A. -The one-- the one-- excuse me, I'm sorry. The
21 one follow up as I'm thinking about that. The one I'm
22 thinking of involves the flashpoint, the flammability point
23 of organic liquid electrolytes. And I think that's one
24 characteristic. And I know that through the work that I did
25 on the liquid electrolyte project.

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1 What's the rate of increase of temperature that that body
2 would reach based upon the furnace temperature? So I'm
3 quite familiar with heating materials testing materials
4 inside ovens and furnaces.

5 Q. Do you know the industry standards applied to
6 rechargeable batteries for notebook computers as of December
7 2010?

8 A. I do not know.

9 Q. Have you ever heard of the IEEE?

10 A. Yes. Yep.

11 Q. And what is that?

12 A. It's an international electrical engineering
13 organization and they have lots of different activities all
14 the way from research and conferences to designing internet
15 networks and computer networks. I use the IEEE 488
16 interface bus. And it's one of the many ways-- it's kind of
17 been supplanted by the USB. But the IEEE 488 bus was a very
18 common way in which computers talk to computers, computer
19 talks to peripherals such as battery packs. And I
20 programmed over the IEEE 488 interface bus to control
21 instruments, control furnaces. So they are an organization
22 that does a lot of different things all within the omnibus
23 of electrical engineering.

24 Q. And they develop standards that are used
25 nationally and internationally, right?

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1 Q. And do you know what types of tests are done on
2 battery cells under the applicable UL standards?

3 A. I'm sorry, that's what I just described. The
4 flammability of the liquid electrolyte that's contained in
5 the batteries.

6 Q. And you've performed these UL tests?

7 A. No, I've not performed those tests.

8 Q. Okay. Are you familiar with the projectile
9 test?

10 A. I am not.

11 Q. Okay. Are you familiar with the oven test?

12 A. I'm familiar with the oven test because I cite
13 an example of that I believe the article is Larsson, where
14 they were, the authors were looking at the self-ignition
15 test, the thermal wearaway-- thermal runaway temperature for
16 lithium batteries as a function of the temperature of the
17 oven.

18 Q. Okay, so that, is it fair to say that comprises
19 your knowledge in respect of the oven test?

20 A. I believe it does. In addition to my general
21 knowledge of designing ovens, designing furnaces more
22 generally, and their characteristics impact on temperatures
23 of materials. We do a calculation in my lab. If the
24 furnace temperature inside is one temperature, then you've
25 got a body inside the furnace like a lithium-ion battery.

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1 A. I think they do. That's correct.

2 Q. Do you dispute that the IEEE 1625 standard for
3 rechargeable batteries for portable computing in 2008 would
4 have been the applicable standard at the time of the design
5 and manufacturer of the Marcellin notebook?

6 A. I'm not expert in how standards are or are not
7 applied, and nor am I expert in evaluating such standards.

8 Q. So as you sit here today, you don't know one way
9 or the other whether it was the applicable standard at the
10 time of the manufacture?

11 A. That's correct.

12 Q. Okay. Have you ever read IEEE 1625, the
13 standard for rechargeable batteries for portable computing
14 2008?

15 A. I can't say I did. I can't say I didn't. It's
16 very likely. It's very possible. And I mean, you've read.
17 I've read thousands of articles over many years and it's
18 possible that I have read that article, but I don't remember
19 it as I sit here today.

20 Q. Do you know what an exemplar is, Dr. Martin?

21 A. In general, I would say yes.

22 Q. And what is an exemplar?

23 A. Well, I would use the term if I've got a set of
24 items, they might be coffee cups, and I pull one out and I
25 use that as an example of a set of different coffee cups.

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1 Q. So an exemplar in this case would be another
2 Pavilion DV6, right?

3 A. I think that's correct, yeah.

4 Q. Similar aging condition?

5 A. I think so. Correct, yes.

6 Q. Did you obtain any exemplars in connection with
7 your work in this case?

8 A. I didn't physically obtain them. That was
9 beyond the scope of my work. But I did review the analysis
10 and photographs of an exemplar Pavilion laptop in one of the
11 reports that I reviewed, yes.

12 Q. So when you say it was beyond the scope of your
13 work, do you mean in respect of your engagement by Attorney
14 Schwarz or that it would not have-- it was not something you
15 would have done to reach the conclusions in your report?

16 A. That's correct, yeah. It was not what I-

17 Q. The latter.

18 A. Yeah. Yeah.

19 Q. Okay. So you didn't attempt to get an exemplar?

20 A. No, I had full documentation and pictures and
21 analysis of an exemplar, and I felt that was sufficient.

22 Q. Did you disassemble the Marcellin notebook, at
23 all?

24 A. No, of course not.

25 Q. Why of course not?

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1 A. So first of all, I was not instructed to. I was
2 not told that there were specific things that I was supposed
3 to tear apart and look at. So that's perhaps one aspect of
4 it, not the most important, but one aspect of it. The
5 second aspect of it is, is, you know, I call tampering with
6 evidence. This is a very critical part of the case. And if
7 I were to tear apart the laptop, as you suggest, of course
8 it would damage the laptop. It would damage the evidence.
9 It would be tampering with the evidence that was a part of
10 it. And then, of course, perhaps most importantly, I just
11 didn't feel it was necessary. The visual observations that
12 I made of the laptop were clear and convincing in my
13 analysis of what had happened with the battery pack and the
14 cells inside that laptop. So I didn't think it was really
15 necessary to go to the risk of tampering with evidence, you
16 might say, and destroying the laptop.

17 Q. Okay. Dr. Martin, have you ever attempted,
18 attended a joint destructive evidence exam?

19 A. I have not.

20 Q. Okay. When you made the examination of the
21 cells from the Marcellin notebook, what did you compare
22 those to?

23 A. My knowledge of 18650 cells. There were-- I
24 compared them to the report and pictures of the, you might
25 call it the tear down of the exemplar Pavilion laptop,

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1 showing the three different sets of laptop batteries that
2 were nominally workable with this particular laptop. And of
3 course, while I've never made 18650 cells, I've been in
4 research laboratories and facilities where they're
5 assembling 18650 cells. And so I've seen many 18650 cans
6 and ribbons and all of the materials that go into one. I've
7 toured Argonne National Laboratory and they've got an 18650
8 lab. In fact, one of my former students runs that
9 laboratory. That development center is probably a better
10 word for it. So, you know, I've got extensive experience
11 with 18650 cells. And I compared the appearance of these
12 cells to that body of knowledge.

13 Q. Okay. For the purposes of our deposition, I'm
14 going to refer to the battery pack and the Marcellin
15 notebook at the time of the fire as the unauthorized or
16 counterfeit battery pack, as you do in your report. Is that
17 okay?

18 A. I think that's correct, yeah.

19 Q. Okay. Do you offer any opinion in your report
20 as to what caused the counterfeit battery pack to
21 malfunction?

22 A. I believe I did, yes.

23 Q. Do you recall what that opinion was?

24 A. That the battery experienced an overcharge and
25 or over temperature condition that led the battery to reach

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1 thermal runaway temperatures which caused some of the
2 batteries to explode, some of the batteries to inject their
3 contents, and then other batteries simply be heated but not
4 otherwise severely damaged.

5 Q. So I'm going to turn back to your report here.

6 A. Okay.

7 Q. So I'm looking at section 10C here.

8 A. Okay.

9 Q. You'll see it begins "the fire at issue in this
10 case." You see that?

11 A. Yeah.

12 Q. Okay, so then in the next, the full paragraph
13 below it, the last sentence reads, this occurred due to
14 several possible causes, including cell imbalance or a
15 defect in one of the cells. Did I read that correctly?

16 A. I believe you did.

17 Q. So you identified several possible causes,
18 including cell imbalance or a defect in one of the cells, is
19 that right?

20 A. I identified possible causes as I state here.
21 Yes.

22 Q. Okay. What were the other possible causes,
23 other than the two you list here?

24 A. No, I'm not going to speculate on those. I just
25 say this occurred due to several possible causes, including

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1 cell imbalance or a defect in one of the cells.

2 Q. So you don't know what the other possible causes
3 are other than cell imbalance or defect in one of the cells?

4 A. I know of others. I did not feel it necessary
5 to write them here.

6 Q. Okay. Do you have any idea how many possible
7 causes there were other than these two?

8 A. In general, you might say there's a very large
9 number of possibilities. And that is all contained in the
10 term defect in one of the cells. There are many, many
11 different ways that a cell can have a defect in it that can
12 lead to overcharge and over voltage and therefore thermal
13 runaway. So that's a collective term that describes many
14 different possibilities.

15 Q. Okay. If you were trying to figure out if it
16 was a cell imbalance or a defect in one of the cells, what
17 would you have done to make that determination?

18 A. Well, I'm not going to speculate on that. I'm
19 going to leave it as what I say here, that my scope of my
20 investigation, my work was to come up with, more likely than
21 not, you might say, analysis of the battery pack, the
22 battery cells, it would lead to this fire. And I, I'll
23 leave it at what I say here.

24 Q. So my issue here, Dr. Martin, is this section.
25 It says that the-- it was caused by overcharge or over

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1 voltage. And then you say there were several possible
2 causes. So as you sit here today, you can't state any way
3 that you would test whether it was a cell imbalance or some
4 other possible cause.

5 MR. SCHWARZ: On the, on the, you're talking
6 about on the cells that blew up and are no longer
7 in existence? Is that what your question is?

8 MR. LEVITES: I'm asking-- my question is,
9 is there any tests that he could have done to test
10 his theory that it was a cell imbalance or some
11 other defect?

12 MR. SCHWARZ: Object to the form of the
13 question. You can answer it.

14 A. So in this case, the cells were essentially
15 completely destroyed, right. There were no contents
16 remaining in either of the batteries. There was nothing
17 left over that would give us any reliable way to test an
18 exploded cell other than the result that the cell exploded.
19 And there are a number, as I say here, a number of possible
20 causes for that explosion. And I'm not going to speculate
21 on how I might go about analyzing, you know, cells that are
22 unanalysable. You might say.

23 Q. Okay, so you can articulate a test to me today
24 that would, that would test your hypothesis here that one of
25 the possible causes was a cell imbalance.

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1 A. Well, I don't think I have to. The Larsson
2 report has already done that significantly for batteries
3 that for all intents and purposes are identical to these
4 batteries. They were subjected to characteristics that are
5 similar to this instance of, of this fire, and they
6 documented the similar explosion, the similar ejection of
7 material that were at root in the failure of that battery
8 pack. So I think there may be literature that we can refer
9 to that would give similar results and therefore could be
10 consistent with these results that we're seeing here.

11 Q. Okay, so if you, if you were able to review that
12 literature, maybe we could talk about it. A possible way to
13 test this hypothesis. Is that fair?

14 A. I think that's, that's one way to begin on it.
15 Yes, that we could, we could look at the literature and,
16 which I've already done. I thought the most relevant
17 literature I cited described the failure of cells and their
18 results and resulting explosion and material ejection.

19 Q. Okay, but the tests that were done in the
20 Larsson study obviously weren't the kind of tests that you
21 could do here, right?

22 A. They wouldn't replicate it identically, I
23 presume, yes. But it would be similar to it.

24 Q. Right. But I guess what I'm saying, Dr. Martin,
25 is the test performed in the Larsson study would not assist

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1 you in, in testing or hypothesis that this failure was due
2 to a cell imbalance or another defect?

3 A. I think it's part of it. I'd probably do more
4 studies of it. Yes. I'd look for other specific studies.
5 But while I don't cite any references here, studies of the
6 effect of cell imbalance and the effects of defects in
7 batteries are pretty prevalent. And so there are, there is
8 literature that would describe the effects of cell imbalance
9 and the effects of defects. But in all cases, you know, the
10 kind of the end result is thermal runaway of the battery.
11 And that's what happened here. So it's kind of conclusive
12 that cell imbalance or perhaps a defect in one of the cells
13 was at cause of the battery fire here as a result of
14 overcharge or over voltage.

15 Q. So does it not matter whether it was cell
16 imbalance or some other kind of defect that was the possible
17 cause?

18 A. It may matter. That was just not the scope of
19 my, my work. My work was to look at was the battery pack
20 and the cells in the battery pack at root cause for the
21 fire. And that's what I'm concluding and only concluding.
22 I'm not concluding on anything more specific than that, that
23 whether, you know, there was-- when you manufacture lithium-
24 ion batteries, for example-- maybe you should, maybe you
25 know this by now. These 18650 cells are called jelly rolls.

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1 And those jelly rolls are hundreds of layers thick, a very,
2 very few microns thin thick, and they're many times thinner
3 than the sheet of a paper. So any kind of little metal
4 particle, any kind of other particle that gets in between
5 those layers can short circuit that, that battery. And as
6 the battery ages, that particle can come closer and closer
7 and get contact between the positive and negative metal
8 terminals and short that out. And you know, that's what I'm
9 trying to ascribe, trying to do that level of detail which
10 can happen-- is very common trying to determine whether that
11 was the particular mechanism of failure causing overcharge.
12 Because now you've got an extra current running that you
13 didn't think should be running. It's that level of detail
14 that would nearly be impossible for these cells that are
15 completely destroyed.

16 Q. So it's your testimony today that that
17 performing the kind of tests that you would need to do to
18 determine the possible cause is nearly impossible here.

19 A. Difficult. Difficult. It would be very
20 difficult. You could test and there are these tests that
21 are out there, people have done. People I'm sure have taken
22 a battery and overcharged it as a function of the
23 temperature, the ambient temperature, and followed that to
24 thermal runaway. They've done the same thing with over
25 voltage. So there is a body of literature that would

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1 A. Yeah, I never mentioned abuse. So I don't think
2 there was any abuse per se because it's a laptop sitting in
3 a home and being charged. So, but I say imbalance and
4 defect, so. But yes, it was more. The result was
5 overcharged and over voltage that led to thermal runaway.

6 Q. I'm sorry, I totally lost track.

7 MR. LEVITES: Ms. Belmonte, could you just
8 read back my last question? Apologies. Dr.
9 Martin.

10 (Record read back.)

11 Q. So I think my question was that the possible
12 causes of the cell overcharge or over voltage were not, in
13 your expert opinion, relevant to your conclusion based on
14 the literature supportive of the cell imbalance as a cause.
15 Is that fair to say?

16 A. Yes and no. Yes. The exact details of the
17 exact underlying root cause were less important than what I
18 think is the more important result of the battery pack
19 overcharge, over voltage aspect. But of course, as a
20 scientist, as an engineer, I want to have plausible
21 underlying root causes for the more important overcharge
22 over voltage. So I describe cell imbalance or defects as
23 one cell as possible causes of the more important final
24 overcharge and over voltage. So it's more of a degree.
25 Overcharge and over voltage is what happened and it's what

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1 probably give pretty good insights on possible outcomes of
2 that which would lead to a thermal runaway. It's my
3 conclusion that the cell imbalance and defect because of
4 that vast literature, those are notable causes of overcharge
5 and over voltage. And as a result of that over voltage
6 overcharge, those in turn cause a thermal runaway.

7 Q. So is it fair to say that because cell imbalance
8 is this notable cause that you don't need to go further than
9 that for the purposes of this case? Is that how you
10 understood it?

11 A. I think for the purpose of my work, cell
12 imbalance or other defects which I can't determine because
13 of the complete destruction of the cells are very common
14 causes of overcharge and over voltage. And the exact cause,
15 underlying cause perhaps, in my opinion, as I say here, is
16 the most important. Otherwise I would have said that in
17 that title C, instead of saying overcharge or over voltage,
18 I would have said cell imbalance or something. It's the
19 overcharging and over voltage that leads to the thermal
20 runaway and that is caused by imbalance. So it was the
21 overcharge or over voltage that was more important to me.

22 Q. I understand. So you're saying whether the
23 overcharge or over voltage was caused by cell imbalance or
24 abuse or something else, it's the overcharge and over
25 voltage which is relevant for the purpose of your analysis.

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1 caused the battery to catch on fire. Now, what caused the
2 over voltage and the over overcharging that has root causes
3 that were beyond the scope of me being able to analyze,
4 perhaps beyond the scope of anybody's ability to analyze in
5 this particular instance. But there are known root causes
6 for that, and so I describe a few.

7 Q. Okay. So, turning back to page 5 of the report,
8 you'll see here that it says the fire started in the office
9 of the home as a result of an explosion of the battery pack
10 on HP Pavilion laptop computer, subject laptop, and spread
11 to other parts of the home. Do you see that?

12 A. Yes.

13 Q. And you testified earlier you're not a certified
14 fire investigator, right?

15 A. I am not a certified fire investigator. That's
16 correct.

17 Q. If you were proceeding in this case totally
18 impartially, you know, with no information ahead of time,
19 would you recite this as a fact or would you-- I guess I'm
20 confused by the presentation of this in the, in the opening
21 lines of your report when it appears to be related to your
22 fundamental conclusions. So maybe you could help me
23 reconcile that. I apologize for wording it in inartfully.

24 MR. SCHWARZ: Object to form of the
25 question.

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1 A. Yeah, you'll have to put that in the form of a
2 question that I can understand.

3 Q. Absolutely. Sorry about that. I'm-- I guess
4 what I'm saying is this-- you recite as a fact here that the
5 fire started in the office of the home as a result of an
6 explosion of the battery pack and spread to other parts of
7 the home. And my question is, in your scientific
8 investigation, wasn't it possible when you first were
9 retained, that the fire started in the office as the result
10 of something else, either in the HP pavilion, in the battery
11 pack or otherwise?

12 A. No, because the reports that I reviewed from the
13 certified fire FRTs and other people that are certified, I
14 believe the Allegany County Fire Service said that the fire
15 started in the laptop. The fire research and technology,
16 there are two, two separate reports, two independent reports
17 that said the battery started in the battery pack. So from
18 my perspective, just like they respect me as an expert in my
19 area of lithium-ion batteries, I respect their opinion that
20 in fact the battery was the cause of the fire. So I'm
21 reciting their findings and then-- but however, it's also
22 true that I also question nearly all opinions. So in the
23 course of my report, then I looked at my evidence as it
24 pertained to the battery and said, well, okay, does that,
25 does the FRT and the Allegany County Fire Service's

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1 conclusion that the fire started in the laptop, is that
2 consistent with my findings relative to the battery pack
3 itself? And I-- that's what I say in my report. So you're
4 right. I do take their expert reports at face value.

5 Q. Okay. Do you know and can you state for the
6 record the safety features of the Pavilion DV6?

7 A. I can't off the top of my head, I can go back to
8 the battery pack. There are perhaps other safety features
9 involving keyboards and monitors and radiation and all that.
10 But respect to the battery pack, I did cite the Pavilion DV6
11 specification for the battery pack and there were a number
12 of safety specifications required, regarding charge voltage
13 and charge discharge voltage, charging voltage,
14 temperatures, etc.

15 Q. Okay. And did you review the notebook schematic
16 that was provided in this case?

17 A. Notebook schematic? I don't know that such was
18 provided to me. I don't-- I know there was in some of my
19 documents there was a-- handbook isn't the right word.
20 There is an instruction manual or a manual for the laptop,
21 but I don't recall and probably therefore can say that I did
22 not review a schematic for the entire laptop. There were
23 schematics for the battery and battery management system,
24 but I don't believe for the entire laptop, if that's your
25 question.

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1 Q. Okay. And you're not an electrical engineer,
2 right?

3 A. I am not. I'm not a trained electrical
4 engineer. That's correct.

5 Q. Okay. Did you do anything to try and determine
6 who manufactured the counterfeit battery pack.

7 A. I personally did not. However, again, I go back
8 to a previous report of the exemplar, and they acquired
9 three different laptops and they had three different battery
10 packs. Two of the battery packs appeared to be authorized
11 authentic and one was not. And the one that was not had
12 characteristics in general, characteristics consistent with
13 that of the laptop, the battery pack in the subject laptop,
14 and that was Hitachi. So it-- I'm not making any
15 association, but it at least the Hitachi battery was
16 consistent with the characteristics, I believe, of the
17 inferior battery -- counterfeit battery was installed in the
18 Pavilion laptop, subject Pavilion laptop.

19 Q. Okay, but you didn't take any, like, further
20 effort to see if the counterfeit battery was a Hitachi or if
21 it was something else?

22 A. No, I would say that was beyond the scope. It
23 really didn't matter which battery was overcharged or over
24 voltage. It exploded, caused a fire, and somebody died as a
25 result.

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1 Q. Okay, so we talked a little bit about the
2 process of thermal runaway. Where does it begin inside the
3 battery?

4 A. Generally, it begins with the chemical reaction.
5 The battery works by a chemical reaction between the anode
6 and the cathode. And that chemical reaction, it's
7 complicated, but it's mediated by the electrolyte separator.
8 And so the reaction occurs electrochemically. There's, of
9 course, a chemical reaction that's lithium-ions plus cobalt
10 oxide equals lithium cobalt oxide. But in order for that
11 reaction to occur, electrons must travel and connect up that
12 reaction pathway. That's where the electrons going in the
13 external circuit. And what happens in thermal runaway is
14 that that reaction, that chemical reaction gets under-- it
15 becomes uncontrolled. And it can become uncontrolled for
16 all the reasons we've been talking about, temperature and so
17 forth. And a common way for that to happen is there to be a
18 literal mechanical short circuit. They're called metallic
19 dendrites. I don't have evidence that that happened in this
20 case. But metal dendrites, lithium, actually short circuit.
21 Then you have a current, you have a hot wire literally
22 running through the liquid electrolyte, and that heats up
23 the electrolyte. There can just be connection of the anode
24 to the cathode and cause a reaction. The other thing that
25 can happen is an overcharge. You put too much voltage into

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1 the cathode, and it's just like water in a dam. If you keep
 2 the water level below the voltage, you might say the height.
 3 Let's associate height with voltage. You keep the voltage,
 4 the height of the water, below the maximum height of the
 5 dam, then everything's fine. But the minute you start
 6 overcharging the reservoir, overfilling the reservoir, water
 7 starts falling, falling over at best, it just falls over the
 8 spillway. At worst, and what's happened in the case of
 9 lithium-ions, you know, that water volume creates a huge
 10 amount of pressure. Well, the charging creates a huge
 11 amount of electrical pressure, and the water can cause the
 12 whole dam to collapse. And that's a catastrophic reaction.
 13 You might say water runaway. Well, the same thing happens
 14 in a battery. The overcharging causes just too much
 15 electrochemical pressure and it destroys the bridge, you
 16 might say the cathode, causing a runaway reaction that then
 17 just speeds up and, and causes fire. Those are common ways
 18 that thermal runaway happens in the lithium-ion battery.

19 Q. Okay, and what temperature does thermal runaway
 20 start in a lithium-ion battery?

21 A. It depends upon the particular battery. But
 22 there's kind of generally recognized three different
 23 regimes, you might say four different regimes. At room
 24 temperature, everything's fine. Then you start to warm it
 25 up. And 46, 47, 50 degrees is kind of the range where you

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1 really want to keep below those temperatures. If you stay
 2 below those temperatures, if you get warm and cool back,
 3 then it returns to its normal state. But when you get into
 4 the 70, 90, 100 degree temperature range, then the liquid
 5 electrolyte starts to boil and it can cause a pressure and
 6 it will mechanically deform the cell. It can actually cause
 7 the cell to vent. And as you continue warming up in the 150
 8 degree range, then you start to cause chemical reactions.
 9 And then those chemical reactions and around the 200 degree
 10 temperature range reach such a speed, such a point, such a
 11 force, that they, you know, they can't restrain themselves
 12 anymore. And you have this runaway reaction, just like a
 13 forest fire. It feeds itself as it goes.

14 Q. And we talked about, we talked about
 15 overcharging, we talked about over volting. A thermal
 16 runaway could be caused by abuse too, though, right?

17 A. Thermal runaway can be caused by abuse, which is
 18 -- often abuse is over discharge. Yes.

19 Q. And it could also be caused by external
 20 overheating.

21 A. Yes. The Larsson report does show that if the
 22 cells get too hot, that heat can come from themselves, which
 23 I believe in this case happened. Or it can come from an
 24 external source that can induce thermal runaway. That's
 25 correct.

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1 Q. And Ms. Marcellin was deposed on July 23rd and
 2 July 24th. You were retained March 23rd, right?

3 A. I believe those dates are correct. I don't know
 4 when she was deposed.

5 Q. Okay. Did you have any questions that came to
 6 mind when you reviewed her testimony that weren't answered
 7 during her deposition?

8 A. No, not really, no. I don't believe so.

9 Q. And as you sit here today, there's no questions
 10 you can think of that you'd like to ask her?

11 A. I'd ask her how she's doing.

12 Q. Okay.

13 A. To lose a significant other. How she's doing.
 14 It's terrible. That's the most important point to me,
 15 really.

16 Q. Would you ask her who installed the battery in
 17 her computer?

18 A. You know, I don't think I would ask her any
 19 questions related to the battery or the laptop. This is a
 20 fire that destroyed her home, killed her life partner. I'm
 21 not sure I'm going to quibble about asking her details. I
 22 think she's been through that. The evidence that she
 23 provided was fairly conclusive, and I-- there's nothing in
 24 that she would say to me that would change my opinion. All
 25 it would do would force her to relive a terrible, probably

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1 the most terrible moment in any person's life. If you can
 2 imagine having to protect your own life and leave behind
 3 someone you love who could not help themselves, I shudder to
 4 think of the agony that she felt. So I, I don't think I
 5 would bring her back through that because the scientific
 6 evidence I have is, conclusive upon itself.

7 Q. Right. There's nothing she could say that would
 8 change her opinion in this case?

9 A. I don't believe so, no. And it would be
 10 unnecessary to force her to go back through that.

11 Q. Do you know if, what, if any software she
 12 installed on her notebook?

13 A. No, I do not.

14 Q. Do you know what software she might have
 15 uninstalled?

16 A. Uninstalled? No, I don't know.

17 Q. Do you know if she did anything to the hardware
 18 of the notebook before the fire?

19 A. I can't prove conclusively that she did nothing.
 20 But the laptop itself, when I examined it personally and
 21 took pictures of it personally, and of course, you know, I'm
 22 an engineer and I work with computers and laptops. I've had
 23 seven or eight or ten over my entire lifetime. I know these
 24 things inside and out, you might say. And I've changed
 25 battery packs and so forth in them. And in that case, you

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1 know, I don't see anything in this pictures of the laptop,
2 comparing it, the picture of the resulting subject laptop to
3 pictures of the laptop in its pristine state, there was
4 nothing in that picture that indicated that anything had
5 been changed or anything different. So it'd be my
6 conclusion, also based on her lack of, you know, how do I
7 say it politely, technical skill, that she would have
8 changed anything.

9 Q. Please state for the record, I mean, I think you
10 already have, but if there's anything other than what you've
11 just stated in respect of your visual comparison that you
12 did to determine what aspects of her notebook were original
13 and which were not, could you please state those.

14 A. Wow. Why don't you try that again on me? I'm
15 sorry.

16 Q. I apologize. So you just said that you, you did
17 a visual comparison of the photographs of the Pavilion
18 design, and then you compared those to the Marcellin
19 notebook which was in your possession. And I'm asking if
20 you did anything else. And based on that, you concluded
21 that there was-- she hadn't made any changes to the
22 hardware. And I'm asking if there's anything else you did
23 to determine what was original to the notebook and what
24 wasn't.

25 A. No, that was beyond the scope. I wasn't

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1 involved in what or was not on or in the computer other than
2 the battery pack. I focus solely on that. And I think
3 everyone involved in this matter has concluded that the
4 battery was not original to the laptop, and that was
5 consistent with my findings. But other than that, I have no
6 opinion on any other aspect of the battery-- of the laptop
7 being original or not.

8 Q. And you, you didn't look at the other components
9 because you were focused on the battery, right?

10 A. Well, there are very few other components. I
11 mean, I looked at the battery. Sorry. I looked at the
12 laptop, and the laptop was, okay, burned because of the fire
13 originating in the battery pack. It did look consistent
14 with the original pictures, pictures of the original laptop.
15 So I had no reason to believe there was any major changes.
16 I will say that I had looked at the battery charger that was
17 used for the laptop, and that is something that's easy to
18 change, and it was not. It appeared to be the original HP
19 battery charger, AC pack, AC adapter, the brick, you might
20 call it, that was not changed. So I had no reason to
21 believe that there was anything other than the battery pack
22 that was not original to the laptop.

23 Q. Okay, so is it fair to say that what you did to
24 determine whether components other than the battery pack
25 were not original was you examined the Marcellin notebook

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1 and you compared it to the photographs of the Pavilion DV6,
2 the spec.

3 MR. SCHWARZ: Object to the form of the
4 question, on the basis that he didn't say that he
5 actually had did that for his report, you asked
6 him a question of how would he do it. So just
7 going to object to that in. In the formation of
8 that question.

9 A. That's correct. I made no effort to investigate
10 the laptop to determine whether or not there were any
11 components other than the battery pack that were replaced in
12 the subject laptop, I focused solely on the battery pack and
13 that it was, in fact a counterfeit battery pack and not
14 original to the laptop. So I made no effort, no
15 significant, no directed effort to determine any other
16 counterfeit or otherwise installed components after the
17 laptop was purchased.

18 Q. Okay. How did you rule out improper use or
19 physical abuse of the notebook as a potential cause of the
20 fire?

21 A. Well, physical abuse, of course, it's difficult
22 to determine that because the laptop was so heavily damaged
23 by the fire caused by the battery pack. But there was
24 nothing with the battery pack, the battery and the battery
25 pack that was anything other than that. I didn't see any

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1 major cracks or scratches. You know, I looked at the bottom
2 of the laptop, and it was, you know, of course, not in
3 pristine form, but other than the battery pack area, it was,
4 it was not damaged. You know, if it had been abused, let's
5 say the simplest ones, you drop it and you break it, right?
6 Well, there were no cracks that I observed in either the top
7 or the casing. Then what was the other one you mentioned?
8 Abuse and--?

9 Q. Improper use.

10 A. Improper use. It's hard to know what improper use
11 would be. I can't opine at all, and I won't speculate on
12 all on how this laptop was or was not used, other than what
13 is consistent with what I saw in the pictures of the days
14 following the fire. And that is, it's sitting on a desktop,
15 plugged in like all other computers are, like the one I'm
16 talking to you right now. And there was nothing in any of
17 the testimony that I read that, you know, it was, you know,
18 she traveled a lot, and she left it in her car, which can
19 overheat and cause problems. She didn't drop it when she
20 was, you know, hiking the mountains somewhere. This was a
21 laptop that, for all intents and purposes, as I understood
22 her testimony, she used it for email and surfing the Web.
23 It was sitting on her desktop, plugged in and used as
24 normal.

25 Q. Okay, so I'm going to turn back to your report,

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1 Dr. Martin. Here's the report I'm looking for, section 10A,
2 which is right here. So in section 10A, you state at the
3 time the subject HP Pavilion laptop was designed and
4 manufactured, it was foreseeable and likely that a
5 replacement battery pack will be utilized during the
6 anticipated lifespan of the device. Did I read that
7 correctly?

8 A. Yes, you did.

9 Q. So in support of this, you further state that in
10 the time period the subject laptop was designed and
11 manufactured, it was foreseeable and expected that users of
12 this laptop would seek replacement or backup batteries to
13 using this laptop during its useful life. It was the
14 typical experience of users that the runtimes of typical
15 LIBs used in laptops such as the subject HP Pavilion laptop
16 were often such that dead batteries in need of replacement
17 was a common experience. Did I read that right?

18 A. Yes, you did.

19 Q. Okay, so first, do you understand there's a
20 difference between having an approved replacement battery
21 and a cheap knockoff counterfeit.

22 A. Repeat the first sentence of that. What word
23 did you use?

24 Q. I said, do you understand the difference between
25 an approved replacement battery and a cheap knockoff

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1 counterfeit? I mean, we talked about this a little earlier
2 too.

3 A. Yeah, I will go. I don't like to use the word
4 approve. We use the word authenticate. And I'll use the
5 word authenticated laptop battery versus a non-authenticated
6 counterfeit battery, yes. I understand those differences.

7 Q. Okay, so merely having knowledge that batteries
8 will be replaced is not the same as having knowledge of
9 dangerous counterfeit batteries, right?

10 A. Don't think I would agree with that. No.
11 Because once the battery is no longer, or the possibility of
12 the battery is no longer an HP product, the possibility the
13 customer is going to go out and look. You know, even at
14 2010, right, the internet was existing, started in 1990s,
15 customers can look, you can go out and look on the internet
16 and, and find batteries, right. So as soon as the battery
17 is replaceable, it's to me obvious that there will be a
18 range of suppliers that can buy, that can supply batteries.
19 Just like my oil filter in my car, there's a range of
20 different oil filters that fit my car. That expectation is
21 widespread. People buy shoes because there's a range of
22 supplies of different shoes and so forth. So as soon as the
23 battery can be replaced, it's immediate and obvious that
24 there's going to be a range of suppliers of those batteries.
25 So that's first. Second, as soon as that happens, which is

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1 obvious, it's also obvious that then there's going to be a
2 range of qualities. We all know that you can buy better
3 shoes and cheaper shoes. You can buy better oil filters and
4 cheaper oil filters. There's going to be a range of
5 batteries that are going to go from, you know, the
6 authenticated, absolutely OEM original equipment
7 manufacturer approved battery, all the way down to something
8 that may not even fit physically. And that is also obvious.
9 So those, those additional two points to me become apparent
10 as soon as a battery can be replaced.

11 Q. Okay, so I understand that it's obvious to you
12 that this is the case. But just for the record here, could
13 you state for us the evidence that supports your assertion
14 that during this time period it was for foreseeable in 2009
15 and 2010 that there would be dangerous counterfeit batteries
16 sold to be used in the laptop during its useful life?

17 A. I can state my own evidence because I had
18 laptops in this time period. And as I state in my report
19 further, I even have the experience of buying extra
20 batteries for my laptop from the laptop manufacturer to use
21 during periods when I use my laptop without access to AC
22 charging. So I've traveled internationally nearly all of my
23 career and my laptop is governed, purchased by, controlled
24 through Iowa State. And while I'm sure some faculty members
25 use our own personal laptops, I never have. I've always

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1 bought approved computers through Iowa State because when I
2 do, then I get Iowa State support of that laptop. So as
3 soon as I do that, then I'm within the ISU purchasing
4 system. So I had the occasion where I would travel to China
5 on a plane. And back in those days, you know, it's not true
6 that every seat had a power plug like they do now. And I
7 knew I was going to get on a 13-hour flight from Chicago to
8 Shanghai and I was going to run out of battery. So I talked
9 to my IT experts and said, okay, I need a secondary battery,
10 I can plug in. What do I buy? And I had already looked on
11 the Internet and I can find batteries because, well, that
12 was the challenge, right? When I went to my IT person, they
13 said, well, Dr. Martin, here's the battery that comes from
14 the manufacturer. You have to buy it. It was much more
15 expensive, almost two to three times more expensive than the
16 laptop I found on the internet. But I can buy it over here.
17 It's cheap. No, you're not allowed to buy things for Iowa
18 State equipment that don't, aren't approved by the vendor.
19 So I had to buy the more expensive battery. I don't have
20 any records of that. I probably could go through Iowa State
21 and find records of that. But I was very intimately
22 familiar with this because I did it. But I bought, I had to
23 buy. Maybe I'll say fortunately, maybe Iowa State was
24 right. Maybe they were right in forcing me to buy the more
25 expensive battery.

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1 Q. So is that it? Have you told me everything that
2 supports this assertion? It's, it's your personal
3 experience.

4 A. No, I mean it's, it's common. I mean, okay,
5 while I was buying through Iowa State, you know, we were
6 all, all us faculty were in the same position. We were all,
7 you know, our darn batteries were always dead. We're always
8 on planes. And so there was this constant problem of, of
9 carrying around extra batteries. The other thing is very
10 clear when, even when you get on a plane today. Right?
11 With the second thing, the people at the counter tell you if
12 you check your bag, please take out any spare lithium-ion
13 batteries. So it's ubiquitous in the marketplace and even
14 everyday life that people carry extra batteries.

15 Q. I guess. My question is, Dr. Martin, is there
16 any other evidence for this assertion other than your
17 personal experience as you've described it for us just now?

18 A. There's a multitude of evidence--

19 Q. -In the record here, though. And in your report
20 I would say?

21 A. In the report, no. But what's out in the
22 literature, it's easy to Google all kinds of information
23 about the access of rechargeable batteries. I do the same
24 thing with my power tools in my workshop. I buy Makita
25 tools. They're very expensive. You can buy knockoff cheap

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1 of the laptop LIBs. That's what you were just talking
2 about, right?

3 A. Right.

4 Q. So what other laptops were designed and by which
5 other manufacturers to accommodate these runtimes, could you
6 list a few manufacturers?

7 A. So my, I've owned and I've done this. I bought
8 replacement batteries for Dell. I bet I bought replacement
9 batteries for, I believe Compaq, I bought replacement
10 batteries for TI, whatever. The university had different
11 contracts over the years. We kind of settled on Dell
12 lately. But early on there were different manufacturers.
13 We could buy from approved manufacturers and I was buying
14 from at least those three. Dell was the most common. HP, we
15 also bought HP computers. We also bought Compaq. I think
16 there was also Lenovo in there. So there's a number of
17 different laptops that had replaceable batteries that in my
18 communication with other faculty and other people, they were
19 buying replacement batteries for.

20 Q. What was the runtime of the Pavilion DV6 as of
21 the date of its manufacture in December 2010?

22 A. I don't know. I would guess, I would guess
23 three to four hours at max.

24 Q. Now you state, we talked about this, you state
25 here that you had the experience of buying extra batteries

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1 Makita batteries that are labeled Makita and they're \$59.
2 If you go to the Makita web page and you buy the Makita Bay
3 Makita battery, it's \$189. I buy the \$189 Makita battery
4 because, you know, I'm a battery guy. So I, I apologize for
5 saying it's just ubiquitous. And, and it's so widely known
6 that people are buying batteries, extra batteries to power
7 their devices. In 2010, it was a replacement battery that
8 actually physically fit in your device. Now, right? You
9 know this, my newer laptops, you can't replace the battery
10 very easily, right? Because of the problems. But now
11 charging stations have replaced replacement batteries. So
12 now you, any time you sit down at airport, there's you--
13 there's a AC port near you. You can buy replace-- you can
14 buy fresh batteries. And I keep a spare battery in my
15 backpack. So it's so common and so ubiquitous that that's
16 what I say here.

17 Q. Okay. But there's no sources that are cited
18 here on Exhibit B to your report.

19 A. That's correct. That, that's correct.

20 Q. Okay. And so turning back to the text of the
21 report here.

22 A. Thank you.

23 Q. So you stated that laptops at the time are
24 designed by manufacturers to accommodate a short run time of
25 their batteries by enabling easy user initiated replacement

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1 for your laptop. I was going to ask you what kind of
2 notebook you own, but you mentioned quite a few. I guess.
3 Which one do you own now?

4 A. I own a Surface Pro by Microsoft.

5 Q. Have you ever tried to put a counterfeit or non-
6 OEM battery in any of your laptops?

7 A. No. As I described, I'm quote not allowed to by
8 Iowa State. I have to buy approved replacement batteries
9 from the manufacturer.

10 Q. Did you ever try to install a counterfeit
11 battery in any computer at all to see what happened?

12 A. No.

13 Q. I'll represent to you, sir, that one of our
14 experts obtained notebooks from Apple, Dell and Lenovo with
15 OEM batteries made in 2010 and installed non-OEM batteries
16 in each of them. Have you ever done anything like that?

17 A. I have not, no.

18 Q. But you could have.

19 A. I could have. It was unnecessary, you know,
20 testing a battery in a perfectly workable brand new computer
21 was not the scope of my work on this. I was. My scope was
22 to investigate the nature of the over voltage, over
23 temperature runaway of the battery pack in the subject
24 laptop.

25 Q. Would you be surprised to learn that all of

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1 these notebooks work normally with a non-OEM counterfeit
2 aftermarket batteries?

3 A. Absolutely not.

4 Q. Why wouldn't it have surprised you?

5 A. Well, the simple fact, right? This battery
6 pack, that while, you know, there's some unknown nature of
7 how it ended up in the subject laboratory laptop. You know
8 it is dated 2015. Right? The fire was I believe, 2020.

9 Right. So it's, it's, it's likely that at least this
10 counterfeit battery operated properly in the subject laptop
11 for five years.

12 Q. Right. But these other notebooks that were all
13 manufactured at the same time. They, they all powered on
14 with the counterfeit battery.

15 A. Of course.

16 Q. Did that, would that surprise you?

17 A. No.

18 Q. But they had no, no authentication scheme that,
19 that prevented the computer from powering on or anything.
20 As set forth later in your report, which we'll get to.

21 A. Yeah, that's the exact whole point that, that
22 there, there was a lack of, and in the case of HP, there,
23 there was a lack of attentiveness to the un-- the safety
24 risk of these counterfeit batteries, even when there was
25 documentation dated back to 2005 of TI and others that were

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1 clearly submitting this information back to these
2 manufacturers, telling them that they had chips and they
3 have chips that are capable of authenticating battery packs
4 that were simply not used. Whether the battery was
5 authenticated or not is a matter of safety. Whether the
6 battery operates, that's just a matter of the voltage and
7 configuration of the battery.

8 Q. Okay, so yeah, we'll get to the Texas Instrument
9 report and all that stuff later. But I guess, I guess my
10 question is, I guess I am confused as to why you're not
11 surprised that HP was not an outlier, meaning that the--
12 none of these other computers apparently had an
13 authentication scheme that would have prevented the use of
14 counterfeit batteries either.

15 A. So you have to go back. Why did I say surprise?
16 So I am surprised how simple authentication systems are to
17 implement and I'm surprised at how low cost they are. So I
18 am surprised that the manufacturers were not implementing
19 them. Now the next part of that is whether or not they did
20 in fact implement them. So what I'm not surprised about is
21 that in the interest of the company making money, of the
22 interest of the company selling more and more laptops and
23 therefore making more and more money, that they didn't
24 implement this capability because this capability would
25 probably increase the cost of the laptop a little bit.

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1 That's very, it's competitive market. So I don't know that
2 pennies matter, but perhaps dollars matter. So I'm, I am,
3 I'm, I'm not, I'm surprised that they didn't implement these
4 cheap features. But when looking at the practical matter of
5 selling laptops, and I'll just go so far to say, you know,
6 corporate profitability, I'm not surprised they didn't. So
7 it's a twofold question and it is difficult and delicate to
8 answer.

9 Q. I appreciate that. So I guess what I'm saying
10 is to confirm here, it doesn't surprise you that HP wasn't
11 alone, at least in your analysis of the scenario.

12 A. I don't know that they're not alone. My
13 experience and what I've cited here mostly revolves around
14 this particular case. I don't have firsthand experience in
15 this because I only used, and I believe it was a Dell
16 computer. I only bought Dell replacement laptops. These I
17 talked about. So I can't really opine on what other
18 companies do or do not. And I don't believe I've seen your,
19 I'll just call it your battery experts report. Maybe I
20 have, but I don't believe I have.

21 Q. Okay, I'm just-- all right, I'll-- we're going
22 to get to all this stuff in time. So I know we have a lot
23 to get through, so I'll just keep moving on and then maybe
24 we can take a break after the next section. Okay, so moving
25 on to section B. You see that there?

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1 A. I do.

2 Q. And in the first sentence of that section, you
3 state that it was well known in 2010 and for a decade prior
4 the LIB packs were being counterfeited and sold. So my
5 question is, Dr. Martin, do I take that to mean that you
6 assert there was a widespread market in the year 2000 for
7 lithium-ion batteries to be counterfeited and sold?

8 A. That's--I don't know about widespread, but I
9 don't say widespread, that they were being counterfeited and
10 sold below market price. Because in that time frame, that's
11 what I did, right? I mean, I looked out on the market and I
12 had choices on the battery pack I could buy from my Dell
13 computer. Iowa State would only allow me to buy the Dell
14 battery, so I didn't buy anything else. So I don't know
15 that I would say widespread, but I was aware of it. And
16 therefore, if I'm aware of it, you know, as a simple little
17 person buying a laptop, it's-- and I could look on the
18 internet, you know, it was fairly, you know, known. I'll
19 just leave it at that.

20 Q. Okay. The only reason I use the widespread, I
21 think it's later in this section here.

22 A. So that's different. That's different. That's
23 different. That's not me saying that. I'm saying that HP
24 was aware, right? HP is a major international company and
25 they're competing against laptop makers all around the

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1 world. And they're getting documents from their chip
2 suppliers, Texas Instruments and so forth. And those chip
3 suppliers are telling them that they've got chips that are
4 needed to provide protection for their battery packs, that,
5 you know, the battery packs that they'll put into the, the
6 OEM laptop. So that is a broader statement because, of
7 course, you know, HP is a company of thousands of people and
8 thousands of engineers, and I'm just a single individual.

9 Q. Okay. But I'm taking first this statement that
10 it was well known in 2010 and for a decade prior back to
11 2000, that lithium-ion batteries were being counterfeited
12 and sold.

13 A. Right.

14 Q. So my question is, what's your proof for this
15 widespread market?

16 A. Well, I don't say it's widespread there. I say
17 it's my proof is my personal experience that I, I could do
18 this. And I'm, I'm confident that if I could show that
19 there were counterfeit batteries out there that I could have
20 bought at lower price, my IT people were aware of that.
21 They said, "Nope, Dr. Martin, you can't buy that cheap
22 laptop battery." So I was aware of it because, and I saw,
23 but they were cheaper and I had to spend more of my very
24 precious research grant money to buy the more expensive
25 battery.

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1 batteries management safety chips, gas gauges, fuel gauges.
2 If there was no, if there was no broad or widespread
3 counterfeiting problem, if there wasn't a problem, they
4 wouldn't, you know, have all these. If it was a very tiny
5 problem. Maybe they'd have one because it just addresses
6 that particular niche problem. So I think it was consistent
7 with the documentation that this was a widespread problem.
8 My experience was that all many people were buying
9 batteries, counterfeit batteries, buying cheaper batteries,
10 and I was a little jealous of them because they could buy
11 cheap, cheap batteries and I couldn't. So the general
12 concept of widespread. Not everybody on the planet, of
13 course, but people that were buying batteries for laptops
14 were in fact having multiple opportunities to buy different
15 kinds of batteries from different vendors.

16 Q. Okay. And just as a housekeeping matter, Dr.
17 Martin, I mean, you're doing a great job today. You're
18 being very helpful educating me on all this stuff. But I do
19 want to be respectful of your time and Attorney Schwarz's
20 time. So I'll try and keep my questions a little tighter,
21 and if you could keep your answers a little tighter, we can
22 hopefully get you out of here sooner.

23 A. That's a good point.

24 Q. And again, and I really appreciate everything
25 you're doing because I'm a layman, Steve is probably an

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1 Q. So are you saying that the market for
2 counterfeit batteries was not widespread as far back as
3 2000?

4 A. I'm saying that for the decade prior, the
5 lithium-ion battery packs were being counterfeited and sold,
6 sold below the market price. I'm not saying, I'm not going
7 to say it's widespread. I'm not going to say it's any-

8 Q. -You can't say one way or the other whether it
9 was widespread or not?

10 A. No, that's not fair for me to say. I'm just,
11 I'm just saying that I have experience that these are being
12 counterfeited and sold below market price. Yes.

13 Q. Okay, so, but going back to the question about
14 this, the word widespread, right? You can't say one way or
15 another whether it was widespread or not?

16 A. Well, I do use the word, therefore I am saying
17 it. I am saying it's widespread because in that context,
18 you know, going back to the TI Report, the TI report was
19 clearly making not just one chip, not just two, not just
20 three, four, five, six, seven, multiple different chips that
21 were to be used on battery packs to authenticate the battery
22 and to ensure safe operation of that battery. If there was
23 no safety problem about that aspect of battery safety, then
24 why would Texas Instrument go to all the engineering trouble
25 to develop not just one, not just two, but multiple

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1 expert by now, but. But I will-- so I will make more of an
2 effort in that regard and I would appreciate if you could,
3 too. And again no slight to anything you're doing so far.
4 It's very helpful. Maybe we could do a little bit on the
5 Texas Instrument, and then we'll take a break. So I will
6 mark that. Or unless you'd rather take a break now, which
7 would--

8 A. No, I'm okay. We can go 20 minutes, to 1, and
9 that'll be 12. Is that 2 o'clock for you guys?

10 Q. 2:00 for us? Yep. Okay, I will. So, yeah,
11 we'll go 20 minutes on that. I'm going to turn to what has
12 been marked as Exhibit 3, which is the Texas Instrument
13 report. Okay. So if you could identify for me the part of
14 the report that supports your assertion that it was known
15 within the industry that these lithium-ion batteries were
16 being counterfeited and sold at prices below prices charged
17 for authorized replacement battery packs in laptop
18 computers.

19 A. If you look at the third sentence beginning with
20 "this has opened a huge market for counterfeiters to supply
21 cheap replacement batteries which may not have the safety
22 and protection circuits required by the original equipment
23 manufacturer." They use the word "huge."

24 Q. Okay.

25 A. And they also use the word "counterfeiters",

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1 which is plural.

2 Q. Right. So this is, this highlighted passage is
3 your only support for the proposition that there was this
4 widespread market for counterfeit 18650 cells?

5 A. No.

6 Q. This, and together with your experiences that we
7 talked about earlier. Your personal experiences.

8 A. And the experience of others that I've
9 interacted with, yes.

10 Q. Right. Okay, so the experience of yourself,
11 others you interacted with, and this article, specifically,
12 the highlighted passage is the support that you have for
13 this proposition?

14 MR. SCHWARZ: And his prior testimony about
15 the other TI specification. He's already talked
16 about that.

17 THE WITNESS: Yeah. Those are also-

18 MR. LEVITES: The other TI battery specs that
19 are mentioned in your report.

20 MR. SCHWARZ: Gas gauges.

21 MR. LEVITES: Gas gauge specs. Thank you,
22 Steve.

23 THE WITNESS: Yes.

24 Q. Right. So the gas gauge specs, this TI article,
25 your personal experiences and the experiences of others with

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1 whom you've interacted.

2 A. Yes. I think that's fairly significant, yes.

3 Q. And there's nothing else that I'm leaving out
4 there.

5 A. Could be, but I think we'll leave it for there
6 because I think that's significant and in my report.

7 Q. Okay. I just want to make sure, because this
8 might be our only chance to talk to you. So if there's
9 something else out there, you know, you can let us know now,
10 otherwise we may never know.

11 A. Right.

12 Q. So there's nothing else that jumps to mind?

13 A. No.

14 Q. Okay. Now, this report, though, it doesn't
15 actually refer to notebook computers or laptops, does it?

16 A. I think it doesn't mention-- maybe, I don't
17 know. I'd have to look through this. But it certainly
18 refers to portable devices, and that portable device
19 includes laptops. So certainly a portable device. A laptop
20 is a portable device.

21 Q. Okay, so you're talking about this highlighted
22 paragraph, highlighted sentence here.

23 A. That's correct.

24 Q. So the report only references portable devices
25 such as cellular phones, PDAs, and DVD players?

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1 A. That's correct.

2 Q. It doesn't actually reference notebook
3 computers.

4 A. I don't think it's necessary to. It says
5 "demand for portable devices", and they use "such as", is
6 not exclusive. It's inclusive. So those aren't the only
7 ones. Cellular phones, PDAs, DBAs, DVDs. There are others.

8 Q. It doesn't reference laptop computers or any
9 other kind of computer, right?

10 A. So let me give you an example. I like fruit,
11 such as apples and oranges. You could conclude reasonably
12 surely that I probably like bananas. Right? So that, that
13 the "such as" is just an example of many different portable
14 devices.

15 Q. Doesn't Texas Instrument manufacture and market
16 gas gauges for notebook computers?

17 A. They do. And that's what this document defines,
18 yes.

19 Q. Well, it doesn't say notebook computers, it says
20 portable devices. But they do manufacture and market gas
21 gauges specifically for notebook batteries, right?

22 A. Yes, they do.

23 Q. And they did so in 2005?

24 A. I believe they did, yes.

25 Q. Okay. Now, looking at this first paragraph

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1 here, specifically this, this second sentence that you
2 referenced in support of your assertion here, doesn't it
3 state that this demand for portable devices has opened a
4 market for counterfeiters to supply cheap batteries, which
5 may not have the safety protection circuits required? Isn't
6 that what it says?

7 A. That's exactly what it says, yes.

8 Q. Okay, so the point was, it was not the
9 batteries, it was the market, right?

10 A. No, the point is batteries. Supply cheap
11 replacement batteries. They're not-- it's the market is
12 simply that which provides the replacement batteries.

13 Q. Did you ever talk to the author of this article?

14 A. No, I did not.

15 Q. So everything you know about this article is
16 contained within the article itself.

17 A. And I think there are other-- yes, but I think
18 there are other TI documents that are similar to this that
19 I've also read and reviewed.

20 Q. Are there any other TI documents other than the
21 gas gauge specifications that we previously referenced and
22 this report here that you reviewed?

23 A. I don't believe so, no.

24 Q. Okay, so everything you know about this article
25 is contained within this article and the gas gauge

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1 specifications that we discussed.

2 A. There's a number of other documents, as I've
3 looked at I mentioned in my earlier statements about other
4 documents and reports that, you know, I can't put my hands
5 on them precisely. But I've read a number of other articles
6 about battery authentication systems and battery management
7 systems that are describing concepts very similar to this.

8 Q. Okay, but that-- I'm saying your personal
9 knowledge about this article comes from the article itself
10 and the other TI gas gauge specifications.

11 A. And the document article.

12 Q. These other articles don't give you knowledge
13 about this article, right?

14 A. Yes and no. They give me general information
15 about the state of the art of battery authentication systems
16 and battery management systems in the period of context.

17 Q. I understand. So you have some background
18 information from other articles and other scholarly
19 materials you've encountered, but it's with respect to the
20 background, right?

21 A. That is correct, yes. Okay.

22 Q. All right. I think. Oh, it's 1:47. We can go
23 a little bit longer. Now, turning back to your disclosure,
24 you say you refer to your discussion in Section 7, which is
25 entitled Safety Systems Employed to Control Hazards, which

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1 you say is supportive of your opinion here in B.

2 A. Okay.

3 Q. Right. You see this here?

4 A. I see that.

5 Q. So my first question is, did you mean Section 8
6 instead of Section 7? Because Section 7 is Safety Systems
7 Employed to Control Hazards and Section 8 is Battery
8 Authentication Systems. I can flip-

9 A. -Yeah, well, you know, it could be a typo.

10 Q. Yeah, I was just, I'm just-- again, for my own
11 for my own sake, I, you know, I just want to make sure I
12 have a grasp on it. Okay, so if we're talking about Section
13 8-- go down to Section 8. All right, so here's Section 8.
14 The first paragraph of this section refers to the TI report
15 that we discussed and quotes the abstract language that we
16 just reviewed together. Right?

17 A. Correct.

18 Q. And there's an ellipsis there. Do you see that?

19 A. Where? Ellipsis, okay.

20 Q. Do you see that?

21 A. Yes. Are you at the OEM? When you say
22 ellipsis, what do you mean?

23 Q. Yeah, the three dots after the word OEM.

24 A. Okay.

25 Q. You see that?

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1 A. Yes.

2 Q. What was in the ellipsis?

3 A. We'd have to go back to that statement and read
4 it. I don't remember exactly. I just-- to keep the report
5 manageable, I did paraphrase information and restricted to
6 that which was most important for the section in the report.

7 Q. Okay, I'm gonna turn back to that so we can go
8 over it.

9 A. You just have to find it.

10 Q. Think this is it right here. I'm trying to
11 highlight it so that you--

12 A. Yeah.

13 Q. Okay, so you'll see the elided text begins after
14 the word OEM, with the period. You see that?

15 A. Yes.

16 Q. And then it begins with the word "these" and
17 then it follows through to the end of that first full
18 sentence and the word "this." So it goes from "these" to
19 "this." You see that?

20 A. Okay, I see, I see "this." The start of the
21 highlight starts "this" and ends-

22 Q. I apologize.

23 A. -parentheses, OEM, parentheses, period. Then it
24 starts "these."

25 Q. Right. So I'll represent to you, if you look in

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1 your report, the ellipsis, the dots began right here after
2 the word OEM.

3 A. Okay.

4 Q. And then the text, it was dot, dot, dot, and
5 then it picked up here, with "can lead to a potentially
6 dangerous situation for end users."

7 A. Right.

8 Q. So this was the elided text here that I've
9 highlighted.

10 A. Yes.

11 Q. You see that?

12 A. Yes.

13 Q. So my question is, why did you leave that out?

14 A. The main point is that counterfeit replacement,
15 cheap counterfeit replacement batteries can lead to
16 potential dangerous-- since you, you've got a mark over, I
17 can't read that last word-- the-- I see it. Ask AI
18 Assistant. I can't read. But, the last part can lead to a
19 potentially dangerous situation for end users. Yes. Yes.
20 The in-between part is more detail about what leads to the
21 potentially dangerous situation for the end user. So it
22 was-- the important point is the first sentence deals with
23 the end user-- end user buying cheap replacement batteries.
24 The middle part tells more science and engineering and
25 aspects of why that battery is unsafe. But for the user,

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1 which the first part of the sentence speaks to buying cheap
2 replacement batteries. This leads to potentially dangerous
3 situations. So I was focused more on at this particular
4 point in time, less on the technical details of why they
5 were important, but simply that they-- why they were
6 important, why they were unsafe. But rather than to the end
7 user, Ms. Marcellin, for example, these batteries were
8 unsafe.

9 Q. Okay, I apologize. I know we're going to go til
10 2:00, but I actually have to stop a little early, so-- or we
11 were going to go for another 20 minutes. So maybe we can
12 take 15 minutes now. So we would come back, you know, ten
13 after?

14 A. What are we doing for lunch? I would need more
15 than 15 minutes for lunch.

16 Q. What do you want to do, Steve? I'm concerned
17 just because there's a lot to, you know, we still got to get
18 through the rest of his report and the rebuttal, but
19 obviously we don't want him to starve. So, however you want
20 to handle, it's fine time wise.

21 A. I can take a 20-minute lunch. Just a 15-minute
22 lunch.

23 Q. We can do 30. I just don't want, you know, I
24 just want to make sure we get through everything and I don't
25 know if you have a hard stop, or what.

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1 MR. SCHWARZ: Let's do 20 and then if, you
2 know, if we linger a little bit longer will be
3 bad. Let's try for 20.

4 MR. LEVITES: Okay, great.

5 MR. SCHWARZ: So that would be at. At
6 quarter after.

7 (Whereupon, a brief recess was taken.)

8 (Back on the record.)

9 EXAMINATION

10 BY MR.LEVITES:

11 Q. So, Dr. Martin, when we left off, we were looking
12 at this Texas Instrument document and we were talking about
13 the elided text and if memory serves, it was your testimony
14 that the highlight that you excerpted the highlighted text
15 due to it's technical nature. Is that fair to say?

16 A. I think so, yes.

17 Q. Okay. But the omission, the elision there
18 wasn't an accident, right?

19 A. No, it was not an accident.

20 Q. So would you agree that it's usually impossible
21 for a consumer to determine the quality of a counterfeit
22 replacement battery without making a purchase and possibly
23 learning the hard way.

24 A. Would you repeat the question, please? Sorry.

25 Q. Yeah, absolutely. I'm asking, would you agree

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1 that it's usually impossible for the consumer to determine
2 the quality of a counterfeit replacement battery without
3 making a purchase and possibly learning the hard way?

4 A. I think it is. I think it's very difficult for
5 the average consumer who's not a battery expert to
6 understand and be sensitive to all the issues that make a
7 battery unsafe. And therefore, yes, it's difficult for a
8 consumer to be aware of the potential hazards inherent in
9 lithium-ion batteries.

10 Q. And that's because it's the consumer that makes
11 the purchase of a cheap replacement battery. Right?

12 A. The consumer does purchase the battery. That's
13 correct.

14 Q. And it's the consumer who installing the
15 replacement, possibly learns the hard way. Right?

16 A. Yes, as we saw here. The very hard way.

17 Q. Okay, so I see that when we're talking about the
18 excerpted language, I see that this first sentence is
19 technical in nature, talking about electrical and safety,
20 but this second sentence that we just talked about doesn't
21 appear to be technical in nature. Would you agree?

22 A. It speaks to, you know, the aspect that the
23 purchasing and the, you know, the information about learning
24 it the hard way? I think that speaks to a different aspect
25 directly.

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1 Q. Okay, so why did you excerpt this language from
2 your report then?

3 A. Wanted to focus it a little more simply, just to
4 say that cheap replacement batteries can be unsafe, which is
5 I took to be a true statement.

6 Q. All right, I'm going to go back to your report.
7 You describe in this Section 8 here that we've been talking
8 about, you describe communication between the battery pack
9 and the computer designed to confirm that the battery pack
10 is one made by the original equipment manufacturer for the
11 computer, right?

12 A. Yes.

13 Q. And can you name the instruments that can be
14 used to observe that commute communication?

15 A. Well, I've mentioned an oscilloscope in the
16 report. You can hook up the oscilloscope to different
17 points on the, on the chip and record the signals that are
18 coming out of that chip. You can reuse an oscilloscope,
19 which is a very common way.

20 Q. Okay. And in the following paragraph, you
21 describe the command and response authentication. And it
22 says-- you see this highlighted sentence?

23 A. Yes.

24 Q. So you stated that if it failed, preferably the
25 device will not operate or the user will receive a message.

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1 This authentication was available and in use in the industry
2 for at least a decade. What are the facts upon which you
3 base the assertion that this type of authentication was in
4 use in the industry for at least a decade prior to the
5 manufacture of this laptop in 2010.

6 A. Part of that is the 2005 document that is
7 describing the chips available that create this
8 authentication system that the computer can use.

9 Q. And what, what's the other part of that?

10 A. I didn't know that there was another part of it.

11 Q. I apologize. It's just you said part of that,
12 so I, I took that to mean that there was something else.

13 A. Oh, no. Just that at least it is in, that it's
14 the statements that are provided through Texas Instruments
15 that these chips were available in 2005.

16 Q. Okay, so the facts upon which you base this
17 assertion are contained within the Texas Instrument report,
18 which we marked as Exhibit 3.

19 A. For the purposes of this report. Yes.

20 Q. Are there any other facts upon which you base
21 this assertion that aren't in the report?

22 A. You mentioned the Linden Handbook of Batteries.
23 There is a section on battery safety, I believe, in that
24 textbook, and it describes-- I'd have to look at the
25 references, but it describes authentication systems and

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1 other documents describe authentication systems. So there's
2 a number of literature reports out there describing
3 authentication systems in this time period that I could have
4 cited but chose not to.

5 Q. Yeah, I'd like to focus on this last part of the
6 sentence where you say it was available and in use in the
7 industry for at least a decade prior to the manufacture of
8 the subject laptop in 2010. So my first question is what
9 industry?

10 A. Well, good question. Portable laptop battery
11 industry.

12 Q. Okay, so the portable laptop battery, this type
13 of authentication system was in use for at least ten years
14 prior to 2010 in the portable laptop battery market
15 industry, rather.

16 A. Yes.

17 Q. Okay, so what, what manufacturers use this type
18 of authentication system in the portable laptop battery
19 market in 2000?

20 A. I don't think I opine on that exact information,
21 though.

22 Q. Do you know any manufacturers that use this type
23 of authentication system in the portable laptop battery
24 market in the ten years preceding the manufacture of this
25 laptop in 2010?

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1 A. I don't know for sure, but it was clear when I
2 was buying replacement laptop batteries in the, in the
3 period of 2000 for my Dell that our IT people at Iowa State
4 were aware of the concerns of cheap knockoff of counterfeit
5 batteries and for me to purchase only a Dell battery for
6 reasons of safety.

7 Q. I appreciate, Dr. Martin, that, you know, you
8 have this personal experience, you know, being instructed to
9 use authentic replacement batteries. I want to focus just
10 on this, this last bit here. Right? So you say the
11 authentication was in use in the industry for at least a
12 decade. And I'm trying to. And you said it's the portable
13 laptop battery industry. So I'm trying to figure out which
14 players in the industry were actually using this in the ten
15 years preceding 2010.

16 A. I don't think I stated any of those in the
17 report and I'm not prepared to provide those now. I would
18 have to look into that. But it was clear to me that they
19 were available and they were in use.

20 Q. Well, I understand why you say they were
21 available because you point to this report, is that right?

22 A. Yes.

23 Q. But I don't understand and I don't understand
24 why you're saying they were in use?

25 A. Because Texas Instruments is manufacturing

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1 multiple chips, spending millions of dollars of development
2 and research and manufacturing money to make these chips.
3 And they would not do that unless there was a sizable market
4 market to sell those chips. They won't make TI-- Texas
5 Instruments won't make chips that aren't sellable. So it
6 was clear to me and is clear that they were manufacturing
7 chips that were in widespread use. Because as I said, there
8 wasn't just one listed, two listed. There were five or six
9 or seven different battery management system authentication
10 chips that were manufactured by Texas Instruments in 2005.
11 And it was clear to me that these chips didn't come on the
12 market at 2004 or like that. They were, these were-- these
13 chips had legacy to them and they were widespread because
14 Texas iInstruments was manufacturing them and they wouldn't
15 manufacture them if there was not a market.

16 Q. So is it fair to say that as you sit here today,
17 you can't state any manufacturer that was using this type of
18 authentication in the ten years prior to 2010?

19 A. That's correct. That's correct. I'd have to do
20 some literature review and find out. Exactly. But it was
21 clear to me that they were available and they were in use
22 because of the manufacturing of Texas Instruments.

23 Q. Now, these gas gauges could be used on a number
24 of devices, right? Like portable DVD players?

25 A. That's what the 2005 document said. Yes.

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1 Q. PDAs?

2 A. Yes.

3 Q. Cell phones?

4 A. I don't know if cell phone was listed in their
5 list, but it possible, any portable devices there. The
6 chips are of course, to make them more profitable, they can
7 be more widely used. And that's why they said "portable
8 devices." And they did. They used the words "such as."

9 Q. So do you know of any PDA manufacturers, cell
10 phone manufacturers, portable DVD manufacturers, any
11 manufacturer of any portable device in the ten years prior
12 to 2010 that was used actually deploying this type of
13 authentication?

14 A. I don't have that information today, no.

15 Q. Okay. And we already discussed the information
16 upon which you relied to make this assertion is the TI
17 report and the associated gas gauge specs?

18 A. And my personal experience and that-

19 Q. -And that of your colleagues. And that's it,
20 right?

21 A. For the most part, yes.

22 Q. Well, is there anything else?

23 A. I'm sorry, that's. That's it. We'll leave it.

24 Q. Okay.

25 A. Okay.

1 Q. Do you know, as you sit here today, if the
2 Pavilion notebook deployed command and response
3 authentication?

4 A. We were told, and we were in, I'll get the names
5 wrong, but in the Atkinson and Pipho depositions they
6 confirmed that HP had put no authentication systems in any
7 of their laptops until 2019, I think, I believe, or possibly
8 2017. So HP directly is saying that they did not implement
9 any authentication systems into their laptops at this time,
10 2010. I think I say that in my report.

11 Q. Okay. And we'll take a look at that as well and
12 then you'll see here. In the discussion of the command and
13 response systems, you noted that these can be defeated by
14 counterfeiters as well, right?

15 A. Yes, I do say that.

16 Q. And so you go on to state that the most
17 sophisticated of the challenge and response systems employ
18 an SHA1 based score hash algorithm to generate a unique
19 query. This system requires a larger investment by the
20 counterfeiter and provides a greater disincentive to produce
21 counterfeit battery packs for devices equipped with this
22 system. Did I read that right?

23 A. Yes, you did.

24 Q. And so the challenge and response system can
25 also be defeated by counterfeiters?

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1 A. If properly implemented. It's extremely
2 difficult because the possible responses are, as I say
3 below, something like 2 to the 160 power. So it's extremely
4 difficult to break that.

5 Q. So I'm coming at this again with a layman, so
6 maybe you can explain this to me. Couldn't like an
7 eavesdropping engineer, the kind of counterfeiter we talked
8 about before, couldn't he just observe the startup sequence
9 and the communication codes between the battery pack and the
10 computer, capture the response and the request, and then
11 program the counterfeit BMU to recognize the request and
12 response. The encrypted request and response. Couldn't
13 that be done?

14 A. In the command and response where the command is
15 "Are you", I'll say, "1-1-1?" And the only command is "Are
16 you 1-1-1?" That single time invariant command "Are you 1-
17 1-1?", can be captured, and that can then be programmed into
18 the battery management system chip. And the chip can be
19 taught to say, okay, "Yes, I am 1-1-1." In the challenge
20 and response system, every time the computer is turned on,
21 it's a randomized number, a huge randomized number. A
22 number with 160 bits and the bits can be 1 and 0, so that's
23 where the two comes from. So it's, it's not a situation
24 where the command is always 1-1-1, it's this 160-long
25 character that's random every time. And the only way that

1 the chip can know the right response is to be able to
2 understand what the algorithm is that created that in the
3 first place. And that's the secret that's held by the
4 company, not the counterfeiter. Now can-

5 Q. -By the battery pack manufacturer? Sorry to
6 interrupt you. But by the battery pack manufacturer or by
7 the notebook?

8 A. By the laptop people. So the laptop people hold
9 the key to this incredibly long 160-digit thing and they
10 give that key off to known battery suppliers and their
11 battery suppliers that are known and qualified and
12 authentic. They can then write that program now, it's not
13 just a 1-1-1, back. You have to get the string, reconvert
14 it and send it back. And that-- therefore that's where the
15 authentication comes from. The company is talking to the
16 battery manufacturer, and that makes it extremely difficult
17 for someone trying to counterfeit a battery. The last thing
18 they're probably going to do is go to HP and say, "Hey, I'm
19 going to counterfeit your batteries, I need your secret
20 key." And the last thing that HP is going to do is say, "Oh
21 yeah, sure, here's the secret key to our, our battery."

22 Q. Are you saying, Dr. Martin, that the encryption
23 key, it can't be derived by a counterfeiter who has both the
24 OEM notebook and battery pack?

25 A. It's a random number generator. That makes it

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1 very difficult.

2 Q. Yes, difficult, but it's, it can be done.

3 A. It's possible, but highly, highly improbable.

4 Q. Okay, so you said that the secure hash algorithm
5 I was the most sophisticated authentication system
6 available?

7 A. I don't believe I-- I do. I guess I do, I say
8 the most sophisticated at that time.

9 Q. Okay. And that would have made the Pavilion DV6
10 safer?

11 A. Yes, it would have made it much safer.

12 Q. And as of 2010, HP should have been doing that?

13 A. Should's a hard word. I will say that HP could
14 have very easily have done that.

15 Q. Could have, but not necessarily should have,
16 right?

17 A. To make their product safer than it-- it would
18 have. They, they would-- if they had done this, it would
19 make their products much safer. And in my opinion, they
20 could have done it very easily. And therefore if
21 something's very easy to do, then they should have done it.

22 Q. Okay, so they should have done it, right?

23 A. In my opinion, it would, it would have saved
24 this life. I think yes.

25 Q. Okay. What is the NIST?

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1 A. There's lots of NISTs. I think the one you're
2 talking about is the National Institutes of Standards and
3 Technology, formally US Bureau of Weights or something.

4 Q. And what is that?

5 A. It is a very, very large government laboratory
6 that does many, many things. Some of the simplest things is
7 they characterize weights, they make standard weights
8 available and so forth. Other things they do is that they
9 make, they design protocols and procedures for doing a
10 variety of things, measuring the thermal expansion
11 coefficient and so forth. I'm not an expert in NIST and I
12 don't make any opinions on what they do or they don't do,
13 but I have a general understanding of what they do.

14 Q. Okay. Would you be surprised to learn that SHA1
15 was subject to a successful differential attack in 2005?

16 MR. SCHWARZ: In what context?

17 MR. LEVITES: Would you be surprised, Dr.
18 Martin?

19 MR. SCHWARZ: Object to the form of the
20 question unless you give him a context.

21 MR. LEVITES: There's no context. I'm
22 asking.

23 MR. SCHWARZ: Well, SHA1 is used in about a
24 thousand different applications. So you know, it
25 could be the computer system for a bank, it could

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1 be anything. They're used all over.

2 Q. Dr. Martin, are you aware of-- that SHA1 was
3 subject to a successful differential attack in any context
4 in 2005?

5 A. No, I'm not aware of the specific instance that
6 you're referring to.

7 Q. Okay. And would you be surprised to learn that
8 the NIST deprecated the use of SHA1 in 2011? That is, they
9 said that a user must accept risk by using the SHA1
10 algorithm.

11 A. Again, without context. It's very likely that
12 there are some applications where it's more risky than
13 others. So I make no opinion on whether a system that I
14 have no knowledge about could or could not. No system in
15 which the SHA1 security protocol was implemented. I have no
16 evidence, no idea what that system was in which it was used.
17 Then I would have no ability to make any comment on whether
18 it was or whether it wasn't safe.

19 Q. Okay, so if you had been aware before today
20 about the successful attack and the deprecation in respect
21 of SHA1, would that change any of your opinions in this
22 case?

23 A. I'm not going to speculate on that.

24 Q. So you can't say one way or the other whether it
25 would change your opinions.

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1 A. Yeah, because it's a totally open ended question
2 that causes me to speculate on matters I haven't studied at
3 this point.

4 Q. So it could or it could not change your opinion.
5 You would just have to study this further. Is that fair?

6 A. I think that's a fair thing to say for what the
7 scientist and engineer that I am, yes, before I make
8 opinions, I apply the scientific method.

9 Q. But generally speaking, the promulgation of an
10 advisory suggesting that it was improper, that the use of
11 SHA1 was carried a risk, at least in certain contexts, that,
12 that doesn't affect your opinion one way or the other?

13 MR. SCHWARZ: Object to form of the question.
14 If you have the document that you're referring to
15 and you could show it to him in what context, that
16 would be helpful.

17 Q. So one of the things you say-

18 MR. SCHWARZ: So, you're not going to show
19 them the context of what you're talking about?

20 MR. LEVITES: I'm moving on to the next-

21 MR. SCHWARZ: You're deliberately deciding
22 not to do that? Just so I'm clear.

23 MR. LEVITES: I'm moving on to the next
24 question.

25 Q. So, Dr. Martin, one of the things you said HP

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1 didn't do was to use this protocol, right?

2 A. No, I didn't say that. They didn't use this
3 particular protocol. They use no protocols is what I've
4 said.

5 Q. And among the no protocols they use was this
6 one, right?

7 A. That's correct. The testimony of the HP
8 engineers, for lack of a better word, said the HP used no
9 protocols. And that's what I reported in my report.

10 Q. So would it have been consistent with the
11 scientific method to investigate whether this protocol was
12 even an industry standard when this was manufactured?

13 MR. SCHWARZ: Object to the form of the
14 question, you can answer it.

15 A. No, because already it didn't matter what the
16 protocol was or wasn't. It didn't matter anything so much
17 about the protocol. The protocol was known. Maybe in, in
18 one instance, the esoteric unknown application you're
19 talking about, maybe there was a way to get around it, have
20 no idea what it-- what application that was. But in a sense
21 that doesn't matter because it was a proven at the time, a
22 proven safe protocol to you. But that doesn't matter
23 either. HP people tell-- told in their deposition, they use
24 no protocols whatsoever. None. As a result of that, then I
25 don't have to investigate all these other protocols. They

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1 used none of them.

2 Q. Well, I guess what, what I'm getting at, Dr.
3 Martin, is if you're suggesting that HP should have used the
4 SHA1 protocol, isn't it relevant whether it is or is not an
5 industry standard?

6 A. My understanding that it was an industry
7 standard at the time.

8 Q. Okay, but you didn't do anything to confirm that
9 before you wrote your report, right?

10 A. It was known and TI Instruments was already
11 specifying it in 2005 that it was known and there were
12 references to the SHA-- SHA1 protocol that they were cited
13 in the 2005 document. So it was a known authentication
14 system, that TI instruments approved of. Right? They're
15 not going to put in authentication systems into their chips
16 that are-- that aren't worth the effort because they have to
17 do the programming. And if they know that the chip, if this
18 particular protocol is easily defeatable or isn't worth the
19 time and effort, they won't put it on their chip. They, on
20 the other hand, said yes. They were boasting that their
21 chip not only did SHA1, but they did command and response
22 and challenge and response. So it was clear to me that TI
23 instruments was already well versed in SHA1 and using it
24 actively in their chips and encouraging portable device
25 manufacturers to use it on their batteries.

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1 Q. And is it fair to say that you relied on Texas
2 Instruments and their report in coming to your conclusions
3 in respect of SHA1 and its advisability in this application?

4 A. As we've gone over many times? It was-- and I
5 don't want to go into it again with interest of time. It
6 was part of an overall discussion and description. Yes.

7 Q. You also stated that Apple sealed the battery
8 inside the 2001 iPad-- iPod, pardon me. So that a user
9 cannot replace or switch out a battery without sophisticated
10 technical abilities. This method has the advantage of
11 requiring a trained technician to replace the battery pack,
12 making it much less likely that a counterfeit battery pack
13 could be installed without user knowledge and also depriving
14 counterfeiters of a market of unsophisticated buyers. I can
15 pull that up so you can see.

16 A. Yeah, yeah. Would you do that? Thank you so
17 much.

18 Q. If I can even find it. I think it's right here,
19 this paragraph. You see that?

20 A. I do.

21 Q. This stupid pop up-- keeps popping up whenever I
22 try to highlight. Maybe I'll do it like this.

23 A. It's fine. I know, it's fine. I got it. Thank
24 you.

25 Q. Okay. Did the iPad have 186-- the 2001 iPod,

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1 did it have 18650 cells?

2 A. It very likely did not, no.

3 Q. Okay. And is it your testimony that Apple
4 sealed its notebooks in 2010 and they could only be replaced
5 by a technician?

6 A. It's not my testimony. I only refer to the
7 iPod.

8 Q. Okay. Would you be surprised to learn that
9 Apple notebooks from the time of 2010, the battery was
10 fairly simply replaced?

11 A. I make no comment on that.

12 Q. Well, does it surprise you or does it not
13 surprise you?

14 A. I make no comment on that. It's not-- I've not
15 just-- I've not looked into that. You know, as a scientist,
16 many things surprise me. Many things don't surprise me.

17 Q. I can rephrase it. I guess the reason I bring
18 it up, Dr. Martin, is you're talking about, you're saying
19 that Apple sealed the iPod and HP should have done something
20 similar here. And what I'm saying is the notebooks that
21 Apple actually manufactured around the time of this Pavilion
22 DV6, they could have their batteries quite easily replaced.

23 They didn't require a skilled technician. And I'm saying-

24 MR. SCHWARZ: Are you testifying to that or
25 do you have some documentation?

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MR. LEVITES: Yes, I can represent to you that I owned a MacBook Pro in 2009 and I replaced the battery within three years.

MR. SCHWARZ: Okay, so that's your anecdotal evidence.

MR. LEVITES: I ordered an OEM battery. It came with several Torx screws that were fitted for the computer. I unscrewed the back, unplugged the old battery, put the new one in, screwed it back together. That's all it took. So I'm-- I will represent to you that that was my personal experience. And I'm asking you, does that surprise you at all?

MR. SCHWARZ: Object to the form of the question you can answer it.

A. No, it doesn't surprise me because at the time, batteries were-- batteries were being replaced.

Q. So batteries are being replaced across notebook computers, right?

A. There appear to be many laptop manufacturers that were enabling their laptop computers to have replaceable batteries. Correct.

Q. Right. And do you know of any notebook computer manufacturers that were sealing their notebooks in 2009?

A. No, I do not.

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Q. Okay, can you-- we've, we've said this before-- I think this may clean it up a little bit. Can you state for the record the make and model of any notebook that you contend had the authentication then in your opinion, the Marcellin notebook should have.

MR. SCHWARZ: Asked and answered, but you can answer it again.

A. Yeah, I think we've gone over that many times. No, without further study, which was not part of this study, I don't have this exact model. That computer that had those authentication systems implemented.

Q. Okay.

A. It was my experience with my own Dell, as you described your own experience, that that was implied for the strong and, and direct requirement that I only buy authentic Dell batteries for my Dell laptop. So it was very highly likely that Dell, through the IT people at Iowa State, which are expert in laptop computers, by the way. That was my understanding that that was part of the reason why, for safety.

Q. Okay. I'd like to talk about the deposition excerpts you reference, but maybe that would be better handled on a break. So I will, I will make a note of that and then maybe you can take a look during the break. But I, I want to just keep going so that you can, we can keep

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making progress here. So you talk about the-- let's go back to B here. Okay, so at that last sentence where you talk about the widespread sale and dangers by at least 2014. So 2014 is after the 2010 date of the manufacturer of this notebook, right?

A. That's true. That's correct.

Q. Okay, so even if HP was aware of this issue in 2014, that was at least four years after the Marcellin notebook was manufactured and probably five or six years after it was designed.

A. Yes, that-- those dates would be consistent.

Q. Did you review the testimony of David Piphos that it's not possible to update a prior laptop battery system with software that would perform these functions?

A. I don't recall that he said that, no.

Q. Okay, if he-- again, we can review that after. But if I represent to you that he said that, does that change any of your opinions in this case?

A. No, it does not.

Q. And why is that?

A. They've already testified that they were aware of counterfeit batteries before 2000, well before 2010. They were aware that TI Instruments, among many other, presumably among others, they were aware that TI Instruments was making battery management system chips that had

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authentication systems built into them. They were aware of authentication systems that can be used well before 2010. And both Piphos and Atkinson, maybe not both, but in their depositions, they stated that HP implemented none of these known authentication systems into the Pavilion laptop.

Q. That's helpful, Dr. Martin. I just want to be careful with dates here, because in your report you're saying HP was aware of the widespread sale and dangers of these batteries by at least 2014, and now you're testifying that it was prior to 2010. So which is it?

A. So in the deposition testimony, I think, if I recall that right, we ought to go back to it. I believe that they were saying before 2010, and that's why here we say by at least 2014.

Q. Okay. All right. Maybe we should just go to-- so we can wrap this up. Okay, so I believe, now, I don't have your expert disclosure up, so I can't figure out what I was-- where the cited language is. Okay, so says 34 to 30-- the cited pages are 34 to 37 and 40 in Mr. Piphos's. So here's page 33. I'm going to back it up a little bit past where you cited. So he says, question. So the Quality Team at some point had meetings, and in those meetings there was a discussion that there were unauthorized battery packs that were functional in HP computers but lack certain safety devices. And he says, answer. We were talking maybe ten

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1 years ago, I can't say I recall. Question. So at least
2 approximately ten years ago, discussions occurred. Yes. So
3 does that refresh your recollection as to whether it was
4 2014 or 2010?

5 A. That is consistent with the 2014, but I don't
6 think this is the only place where this topic was discussed.

7 Q. Okay, let's go through the rest of it then.
8 Page 34. Let me know when you've read this page. I'll move
9 to the next one.

10 A. Okay. Yes.

11 MR. SCHWARZ: You going to go through the
12 whole deposition?

13 MR. LEVITES: Just the pages site. I mean,
14 we could do this during a break. I just figured
15 it would be best to tie this up. I'm going
16 through the pages he cites in his report.

17 MR. SCHWARZ: Okay, thank you.

18 Q. There's four pages of Pipho and a couple of
19 Atkinson, I think.

20 A. Yeah, that's good. Yep.

21 Q. Okay, and then the next page you cite is page 40
22 here.

23 A. Yes. Okay.

24 Q. Okay. So having reviewed Mr. Pipho's testimony,
25 does that refresh your recollection concerning when HP

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1 became aware of the sale of counterfeit battery packs?

2 MR. SCHWARZ: Object to the form of the
3 question. They said widespread sale.

4 A. Yeah. So with the two parts to this, there is
5 the 2014, which is consistent with Pipho's testimony. If we
6 take the deposition being in 2024, minus ten is 2014. So in
7 that case, then that's consistent. But what isn't
8 consistent with that is the documentation that HP was aware
9 of through Texas Instruments in 2005 that counterfeiting was
10 a problem and that Texas Instruments was making fuel gauges.
11 That Texas Inst-- that Hewlett Packard was already
12 specifying. Hewlett Packard was specifying specific
13 different chip sets from Texas Instruments to use in the
14 laptop. The specific, the specific laptop that battery that
15 was in the pavilion in 2010, they were-- HP was already
16 specifying specific battery safety lev-- chipsets
17 manufactured by TI in, and specifying them for the Pavilion
18 laptop. So it was clear to me that in the vicinity of 2008,
19 2009 and before 2010 that HP was specifying safety chipsets.
20 We'll just say it that way, from TI and that the reason for
21 those chipsets being manufactured was among those being
22 proper battery management. But central to that was battery
23 safety and battery authentication. So whether Pipho or not
24 said specific dates that match back to that, that's another
25 matter of deposition and testimony. But it was clear from

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1 the manufacturing documents, HP specifying safety protocols
2 on chipsets before 2010 for the Pavilion and Texas
3 Instruments specifying safety protocols in their chipsets in
4 2005. That it was clear HP was aware that this was a
5 widespread problem.

6 Q. So, I'm-- is it fair to say, Dr. Martin, that
7 your testimony that HP was aware of this problem prior to
8 2010, the sole basis for this testimony is this Texas
9 Instruments report that you cite here in this sentence?

10 A. No.

11 Q. Together with the related gas gauges and the
12 battery specification from HP?

13 A. Clear. It was clear that HP was specifying
14 specific battery gas gauges that were employing high levels
15 of security for their authenticatable battery packs.

16 Q. Well, now I'm confused. You just said that they
17 didn't use any authentication. So wouldn't it make more
18 sense that the safety features were a specification for
19 their authorized manufacturers?

20 A. It certainly would make more sense, wouldn't it?
21 Because then maybe they would use them, but that didn't.
22 That's not what happened. They were specifying, but then
23 they never used them. They were aware of them, but they
24 never used them. That's the point.

25 Q. And you don't know if anyone else did?

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1 A. I don't have any other documents from any of the
2 manufacturers now.

3 Q. Okay, so all we know about the feasibility of
4 this is coming from Texas Instruments and this report.

5 A. No, Hewlett Packard is not going to specify a
6 particular chipset that doesn't work in their laptops.
7 Right? That they're a big company. They work with Texas
8 Instruments. They get these chipsets in, they show that
9 they work, and then they say, "oh, okay, you can-- I'll
10 specify this one, this one and this one, because we've
11 tested it, We've tested in our products." So HP, well
12 before 2010, was specifying specific chips, chipsets that
13 they were buying from Texas Instruments. They were testing
14 them. They're not going to buy a chip from Texas
15 Instruments they've never tested before. And so-- and they
16 also can't implement a chipset into their own-- into their
17 own computer that they can't test and figure out how to
18 communicate with. So, well, before 2009, HP is
19 communicating directly with TI to specify chipsets that
20 implement these safety procedures. Now, they chose, in the
21 end, even though all these chipsets had these capabilities,
22 they chose not to implement any of them, any of the safety
23 protocols.

24 Q. Now, Dr. Martin, these chipsets had a lot of
25 safety protocols other than this authentication scheme,

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1 right?

2 A. That's correct.

3 Q. Okay, so the Texas Instruments document
4 concerned other safety features other than authentication as
5 well, right?

6 A. Authentication was one among many of the safety
7 features, yes.

8 Q. Okay, so the document-- let me back up a second.
9 Do you have any personal knowledge or any evidence in the
10 record that HP ever saw this report from Texas Instruments?
11 I'm not talking about the gas gauge specifications or
12 anything else. I'm talking about this report that's been
13 marked as Exhibit 3 upon which you rely.

14 A. They had to have been well aware of the TI
15 documents because they use the exact same model numbers for
16 chipsets. And not only that, they also use the very
17 detailed technical information for those chipsets. For
18 example, one was measuring the voltage resolution plus or
19 minus 30 millivolts, measuring the voltage range 2.5 volts
20 to 4.4 volts. So Hewlett Packard was well aware of all the
21 details of that chipset, and they used those details to put
22 into their HP document well before 2010.

23 Q. I understand what you're saying, Dr. Martin, but
24 what I'm saying is you're referring to the specification set
25 forth in the gas gauge specs by TI, right?

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1 sold in the marketplace in 2025 than in 2010?

2 A. I have no knowledge of that. I wouldn't be able
3 to say anything about that. I'm not an expert in markets.
4 Not an expert in market sales. I have no idea.

5 Q. Would you agree that manufacturers today use
6 more sophisticated methods of authentication than in 2010?

7 A. I think most manufacturers have obviated the
8 need for authentication system because they've made their,
9 they've sealed all their batteries inside their device. You
10 can't, like my laptop, like, my phone. You can't take the
11 battery out of it. So I think they've obviated the need for
12 authentication systems, probably in part because of the-

13 Q. -So is it your testimony today, Dr. Martin, that
14 the counterfeiters have been defeated?

15 A. No.

16 Q. Counterfeiting is still a problem with
17 batteries, right?

18 A. It's possible, yes.

19 Q. It's possible or it is?

20 A. I said it's possible.

21 Q. I'm saying, do you know one way or another or
22 you can't say if counterfeiting batteries is still a problem
23 today in 2025?

24 A. I think you can still buy-- it all depends on
25 what you're talking about. In the marketplace of our garden

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1 A. Yes.

2 Q. I'm talking about this report marked as Exhibit
3 that I'm going to put up on the screen. This document.
4 You're saying HP had awareness of this document. And I'm
5 asking you, do you have any evidence or personal knowledge
6 beyond what you're suggesting, which is that they must have
7 known because they were doing business with TI and they were
8 specifying TI gas gauges?

9 A. And they were specifying. Yes, and they were
10 specifying specific safety protocols. SHA1 in particular in
11 the HP documents.

12 Q. But you don't have any personal knowledge or
13 evidence in the record that HP or anyone at HP had read this
14 document.

15 A. We'd have to look at the deposition of Atkinson
16 and Pipho to see if, whether or not that question was asked
17 of them and whether or not they confirmed or not the HP
18 knowledge of this document.

19 Q. Okay, so--

20 A. I suspect it's in there, but I, I just--

21 Q. And we can, we can definitely go over that at a
22 break. I'll flip it over to you and, and I, I would
23 encourage you to look for that. That would be helpful. As
24 we sit here today, Dr. Martin, isn't it true that there's a
25 greater market and supply of counterfeit batteries being

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1 tools. Yes, you can buy replacement batteries. That's
2 probably still a problem. And the problem in the area of
3 laptop computers, nearly all the laptops that I see that
4 I'm-- that people are buying these are all sealed up. So
5 it's probably less of a problem now because the batteries
6 cannot be user replaceable.

7 Q. But it's a problem.

8 A. I don't know that.

9 Q. Well, you said it's less of a problem. That
10 implies it's still a problem.

11 A. Well, then it's less of a problem.

12 Q. Okay, so it is still a problem. Right?

13 A. How many times you want me to say it's less of a
14 problem?

15 Q. Okay.

16 A. Less is an adjective. Problem's a noun.

17 Q. I understand, I understand. I'm just trying to
18 get the answer that I want. I understand why you don't want
19 to give it. That's okay.

20 A. Well, that's not fair.

21 MR. SCHWARZ: Back to the characterization.

22 Q. Can you name one manufacturer of notebook
23 computers who can say with certainty that counterfeit
24 batteries don't work in their computers?

25 A. No, I cannot.

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1 Q. I'm going to turn to what's been to Section C of
2 the report here. So you state that the cause of the fire
3 was a counterfeit battery pack installed in Ms. Marcellin's
4 computer, right?

5 A. I think that's what I state, yes.

6 Q. Okay. And you testified earlier you cannot
7 determine which of the possible causes of over voltage or
8 overcharging, including cell and bands or cell defect,
9 caused a thermal runaway, right?

10 A. That's correct. I, it's beyond the scope of my
11 work.

12 Q. Okay, so is it correct to say that you're
13 alleging the failure mode of the battery pack without
14 identifying the initiating cells?

15 A. That's incorrect. No.

16 Q. So you did identify the initiating cells here?

17 A. Yeah, there were. I described a cascade effect.

18 Q. And you described which cells were the
19 initiating cells versus which were affected.

20 A. I did not. I don't believe I said initiating
21 because that's a definitive statement. I said it's
22 consistent with-- I think there were two cells that were
23 literally exploded. There were two cells that were ejected
24 and there were two cells that were not ejected. It's
25 consistent that the cells that had exploded, you could

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1 imagine, would have a greater impact on starting the fire
2 and be the initial. Then they cause the others, which are
3 less violent, just an ejection. And then the remaining two,
4 of course, may be in contact with the ones that being
5 ejected. They did not. They did not rupture. It's just a
6 consistency argument.

7 Q. So with those two unruptured, I'd like to focus
8 on those. Did you do any mass measurements on the two
9 unruptured cells?

10 A. No. They have so much extra material melted to
11 them that it-- and I'm not going to tear them apart because
12 they're actually still dangerous. So, no, I did not.

13 Q. Did you do any 2D x-ray analysis of the
14 unruptured cells?

15 A. I did not.

16 Q. Did you do any CT scans of those unruptured
17 cells?

18 A. I did not. They were not-- it's very consistent
19 that they were not the source of the fire, so I did not
20 investigate them.

21 Q. So that's consistent with the scientific method
22 as you understand it, right?

23 A. Yeah. They were not ruptured, they did not
24 catch on fire. So, you know the hypothesis that they were
25 not involved in the fire is consistent. Yes.

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1 Q. There was no need to investigate them further in
2 your view?

3 A. There's always a need, but in terms of time and
4 task and, and what is needed for this project? I did not
5 investigate that.

6 Q. So if you had the time, you would have done it?

7 A. It's possible that I might have done it, yes.

8 Q. Would you like to do it and see if that changes
9 any of your opinions? In this case?

10 A. It won't change my opinions. In the case.

11 Q. You're certain. Are you certain that it
12 wouldn't change your opinions?

13 A. I'm fairly certain. I'm fairly certain that
14 they were not ejected. As a result, they were not exploded,
15 therefore they didn't have any fire emanating from them.
16 Therefore, I don't suspect that they were highly likely
17 involved in the fire. Therefore, I don't believe that that
18 would change my opinions.

19 Q. So for the purposes of this report, those two
20 unruptured cells are irrelevant?

21 A. No, that's not true.

22 Q. How are they relevant?

23 A. Because they show that the speculation described
24 in the Quinn report, I believe it was, that there was a
25 secondary fire that caused the exploding laptops. And it

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1 was my understanding from the Quinn speculation that it was
2 the heat layer of the fire started previously, that the heat
3 layer came down and then enveloped the laptop in this huge
4 ball of fire and heat that then caused the batteries to
5 undergo explosion. And that's not what happened, of course.
6 Right? If this big ball of fire, which of course it's room
7 wide, it's encompassing the entire room, it's going to, that
8 big ball of fire is going to encompass the entire laptop.
9 It's going to engulf the laptop completely in fire. All
10 parts of that laptop are going to be exposed to roughly the
11 same temperature. Because the fire is so big, it's going to
12 cause all of those, all six of those batteries to be exposed
13 to about the same temperature and they're all going to go
14 into thermal runaway. The Larsson report says that there in
15 all cases, I think was 12 or 13 batteries. In every case,
16 when those batteries were exposed to fire of temper-- of
17 heat in excess of 300 degrees for a period of about an hour,
18 every single battery exploded, caught on fire, exhibited
19 thermal runaway, independent, independent of whether the
20 battery was charged, discharged. Any status of that
21 battery, old, new, brand new, they all exploded. And that's
22 not what happened here. The batteries did not.

23 Q. So we'll get to the Larsson report next. I
24 appreciate that. So I'm going on to D, which is this
25 section that I've displayed on the screen here. So the HP

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1 approved battery pack for the Pavilion had the safety
2 features you're referencing here, right?

3 A. The gas gauge did? That's correct.

4 Q. And the Pavilion would have had one of those HP
5 approved battery packs with those safety features in it when
6 it was sold to Ms. Marcellin?

7 A. That's correct.

8 Q. And those battery packs had the safety features
9 installed to reduce or eliminate the risk of thermal
10 runaway, right?

11 A. Yes and no. It does no good to have a battery
12 pack gas gauge with all these safety features and a laptop
13 have none of them. And that's what Atkinson and Pipho
14 report. HP was specifying all these safety features. TI
15 Instrument says yes, sir, we got it. We're doing it. We're
16 going to put all these safety features on our chip. We're
17 well ahead of this. We're going to do this and they do it
18 and they meet the specification. Then what does Hewlett
19 Packard do? They have all that capability, but they don't
20 implement a single safety feature. So it takes two. It's a
21 communication. And HP completely failed, in my opinion, on
22 the other side of that. So it doesn't matter that they had
23 them or not.

24 Q. So is it your testimony, Dr. Martin, that the HP
25 authorized battery packs, I thought you just told me that

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1 they had those features. These safety features listed?

2 A. The chipset does the BQ 2060, the authorized
3 chipsets do have those safety features, but they can't
4 implement all those safety features without the computer
5 talking to it, the HP implementing those. So there's two
6 safety features. The computer authenticates this is an
7 approved battery. Then the chipset then does the
8 appropriate battery safety management. And Hewlett Packard
9 failed on the first part of that. The most important part.
10 That is first showing that the battery pack itself was an
11 approved pack.

12 Q. I understand that. That's a helpful
13 distinction. I'd like to focus on the second part, not the
14 first part, the safety features. Okay, so what I'm saying
15 is the approved battery packs did have these safety
16 features, right?

17 A. Yeah.

18 Q. Okay. And those features were installed to
19 reduce or eliminate the risk of thermal runaway. That was
20 the purpose of them.

21 A. That's my understanding. That's correct, yes.

22 Q. Okay, I'm a little confused about this sentence.
23 Maybe you could help me understand it. It's the last sent
24 full sentence in this section. I've highlighted it here.
25 You state, if the opposite is assumed, then a laptop, a

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1 motherboard, and internal controller malfunctioned. So my
2 question is, what's your evidence to support the theory that
3 the motherboard malfunctioned?

4 MR. SCHWARZ: You have to give them the
5 whole context of that paragraph here.

6 MR. LEVITES: It's up on the screen.

7 MR. SCHWARZ: Yeah, I know, but I'm just
8 saying.

9 Q. Yeah, take your time, Dr. Martin. Please review
10 it.

11 A. Thank you. Okay. I'm familiar with it.

12 Q. Okay, so my question is, what is the evidence to
13 support the theory that the motherboard malfunctioned in
14 this case?

15 A. I'm not saying that the motherboard
16 malfunctioned. I'm saying that there's two-- remember, it's
17 communication. And communication requires the, we'll say
18 the computer and the battery management system. So if, if
19 everything works, if the thermistor is here and is
20 communicating with the laptop, then the laptop is recording
21 the temperature. And if that temperature rises, then the
22 computer can shut everything off. Okay? Now there's two
23 things, at least two things that can interrupt that
24 communication. First, if there's no chip on the-- if
25 there's no thermistor enabled to the chip, then the computer

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1 can't get that signal. All right? And so it doesn't matter
2 that the-- even if the motherboard can read that signal,
3 there's no signal over here for it to read, so there's a
4 failure. The other way it can fail is that if there's a
5 signal over here and is trying to send it to-- I'm sorry,
6 trying to send it to the computer motherboard. But if that
7 is not implemented on the motherboard. Right? Then the
8 laptop is failing.

9 Q. Okay, that's, that's helpful, I guess my
10 question is, is it your opinion that the motherboard did or
11 did not fail? I can't really figure it out.

12 A. We have to go back and study the report in
13 detail, but we'd have to look at the thermistor pin on the
14 battery chipset. And it says here, I said, there is also no
15 evidence that the redundant thermistor was intended to
16 communicate directly motherboard. So it seemed like, for me
17 and my understanding of this chipset, that it had that
18 capability but was not implemented. So in my two point
19 here, it was like the, the motherboard over here was waiting
20 for that signal, but there was no signal coming from the
21 chipset.

22 Q. Right. So the issue was with the counterfeit
23 battery pack. Right?

24 A. Yeah, yes, yes, yes.

25 Q. The malfunction wasn't with the motherboard?

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1 A. Right.

2 Q. Okay. All right, so I'm going to turn to the
3 next one-- cruising along here. So we, we just talked about
4 this before, but if the counterfeit battery had the features
5 that were specified by HP, the fire would not have occurred,
6 right?

7 A. Yes, that's what I say.

8 Q. Okay. And that means that if the notebook had
9 been used with its original battery or an authorized
10 replacement which had the features specified by HP, the fire
11 would not have occurred, correct?

12 A. That's correct. On the chipset level, yes.

13 Q. But the notebook didn't have the original
14 battery in it or an authorized one, right?

15 A. That's the conclusion of many people in this
16 case, yes.

17 Q. Okay. And yourself?

18 A. Yes.

19 Q. All right, moving on to F. Got some meat and
20 potatoes here. Okay, so in this first sentence of Section
21 F, you referred above to Section 8 for the proposition that
22 there were a number of available battery authentication
23 systems that could have been designed and that would have
24 detected the unauthorized battery. But when we reviewed the
25 report together, it was your testimony that each of these

1 authentication schemes could be defeated, correct?

2 A. No, I didn't say that.

3 Q. You didn't say that each of the authentication
4 schemes could be defeated?

5 A. I said it was. Was possible, but highly, highly
6 improbable.

7 Q. Okay, it's possible, but improbable?

8 A. Improbable.

9 Q. Okay.

10 A. Yes.

11 Q. So then you go on to say HP affirmatively chose
12 not to employ any of these available systems at the time
13 that-- sorry, I'll highlight the line here, starting here--
14 chose not to employ any of these available systems at the
15 time it designed and manufactured the laptop.

16 A. Correct.

17 Q. And you cite Mr. Atkinson's testimony at pages
18 107 to 108. So I'd like to pull that up and if you could
19 just point me to the lines upon which you are relying. And
20 I apologize. This one looks like it's a four, so I'll have
21 to blow it up. But it was 107 to 108, which is this one.
22 Try and blow this up a little bit. So I apologize. You
23 maybe want to do 107, then 108, or can you read both?

24 A. Yeah, let's read. Let's read one at a time.
25 It's, it's-

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1 Q. Sorry about that. I thought, I thought I put
2 the single page version, but-- so here's 107 on this bottom
3 left quadrant here.

4 A. Okay. Okay.

5 Q. Then here's 108 in the top right quadrant.

6 A. Yes.

7 Q. Okay. So having reviewed the testimony that you
8 cite in your expert disclosure here, could you identify the
9 lines of his testimony that support your assertion that HP
10 chose not to employ these systems at the time of its
11 manufacture?

12 A. I think it's, it's goes back to that 2019-- I
13 think there was a statement in that. Go back to the test to
14 go back to the deposition. Right. I'm not aware of any
15 other communication except for the pop-up message to the
16 customers in 2017. So that's one indication that there was
17 nothing going on about the safety of these things until
18 2017. I think there's other, I think there's other more
19 definitive statements, if I'm remembering right. But that's
20 consistent with that statement.

21 Q. So I'm just focusing on this one because this is
22 the one you actually cite in your report. These are the two
23 pages. And I can't figure out what in his testimony
24 suggests that HP affirmatively chose not to employ-

25 A. -Yeah

1 Q. -these systems in 2010. Right? What he's
2 saying here is that HP wasn't even aware of the problem
3 until 2017, so how could they have been affirmatively
4 choosing not to employ these systems back in 2010? I can't
5 square it.

6 MR. SCHWARZ: I'm sorry, you're quoting a
7 question, not an answer. And it wasn't-

8 MR. LEVITES: -I think he answered 2017.
9 Right? That's what the witness just read.

10 MR. SCHWARZ: Well, basically saying that
11 that's the first time they implemented anything
12 with regard to authentication at all-

13 MR. LEVITES: -And I understand that. I
14 understand that.

15 MR. SCHWARZ: -Well, then why are you asking
16 the question?

17 MR. LEVITES: Because his report says-

18 MR. SCHWARZ: Well, there may be the wrong
19 testimony that's cited there-

20 MR. LEVITES: -they affirmatively chose not
21 to employ the available systems. And I'm asking
22 what is, what are the facts upon which he bases
23 this assertion. I go to the transcript, and all
24 it says is, we didn't even know about it til 2017.

25 MR. SCHWARZ: I think you're misreading the

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1 report,

2 MR. LEVITES: And I'm asking him to help me
3 with it.

4 MR. SCHWARZ: Okay, well, the available
5 systems were we've been testifying about for
6 hours, and they admit here that they didn't
7 implement any of them until 2017.

8 MR. LEVITES: -I understand.

9 MR. SCHWARZ: -Put those two things
10 together and you have an answer.

11 MR. LEVITES: So why don't we let the
12 witness answer them?

13 Q. So, Dr. Martin, having heard the colloquy with me
14 and attorney Schwarz, can you identify the lines of his
15 testimony, Mr. Atkinson's testimony that you cite here, that
16 support your assertion that HP affirmatively chose not to
17 employ these systems in December 2010? And if it's not in
18 there, that's okay. Just say, I don't see it in there. It
19 must have been somewhere else.

20 A. I will say that, that it is in part in the
21 Atkinson deposition, but I also believe it's in part in the-
22 - more in the Piphio deposition.

23 Q. So you think David Piphio is the one that said HP
24 affirmatively chose not to employ the systems?

25 A. It's very likely, yes. In my memory, yes.

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1 Q. But we just reviewed his testimony, remember?
2 Did you see anything there that suggested that? That was
3 the other portion that you cited?

4 A. We reviewed a portion of it. Sorry, we reviewed
5 a very tiny portion of it. You know, I, I do hold the, I do
6 hold the right to recorrect and apprise my report. And
7 this, this may be an instance where we cited one. I cited
8 one, but did not cite the other.

9 Q. Okay. I'm just, the reason I'm trying to get
10 at all this is, you know, we have the sites that we have, we
11 have the report we have, and I only have today with you, so
12 that's, that's the only reason I'm going through all of
13 this.

14 A. I am completely sensitive to it. Absolutely.

15 Q. Okay, so did you review Atkinson's testimony
16 that a variable challenge and response system would not work
17 and would not deter counterfeiting?

18 MR. SCHWARZ: Would you point to the
19 testimony you're talking about?

20 A. Yeah, I don't, I don't remember all.

21 Q. It's, it's right off, it's only two pages after
22 this right here.

23 MR. SCHWARZ: Good. Thank you.

24 Q. Pages 110 to 113.

25 A. Yes. Now I'm remembering. So go ahead with

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1 your--

2 Q. My question is, so do you review that testimony
3 when you prepared your report?

4 A. Yes. It's well known that the simplest of the
5 command and response queries are easily defeatable.

6 Q. But is that what he's talking about here, you
7 see here?

8 A. Yes, I believe that's what. Yeah, he's talking
9 about the simplest one.

10 Q. With the secret keys? Isn't that the SHA1
11 system you were just discussing earlier?

12 A. I think he also talked about the command and
13 response one. Yeah. But it says, no, we have not used
14 those.

15 Q. Right. And I'm saying, Did you review his
16 testimony as to why we didn't use them?

17 A. I don't, I think he didn't because they didn't
18 use any of them. I don't think they didn't use one or the
19 other because they thought they--

20 Q. Dr. Martin, could you review this highlighted
21 testimony here?

22 A. Yes.

23 Q. Did you review that prior to-

24 A. -I read that, Yep. I'm, I'm remembering that
25 now, yes.

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1 Q. Okay, so my question is, having reviewed that
2 testimony, does that change any of your opinions in this
3 case?

4 A. No, does not.

5 Q. Okay. As of December 2010, can you identify any
6 e-requirements, guidance, recommendations with respect to
7 the presentation of an on-screen warning related to safety
8 information regarding a counterfeit or unauthorized battery?

9 A. I don't have any specific instances to report
10 about reporting on whether or not a battery is authentic or
11 unauthentic, if that answers your question, which was long.

12 Q. Yeah. I'm looking for requirements, guidance
13 recommendations, whether from industry groups, government or
14 otherwise. We've talked about some of these entities.

15 A. Yeah.

16 Q. There are surely others that you know, that I've
17 never even, I couldn't even dream of. Can you identify any
18 requirements, guidance, recommendations concerning an on-
19 screen warning as to the safety information of a counterfeit
20 or unauthorized third party battery?

21 A. I'm confident they're out there, but I did not
22 go and pursue and dig those out for the purposes of this
23 report.

24 Q. And you were confident they're out there as of
25 December 2010?

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1 A. Yes, because counterfeit batteries and the
2 dangers therein were widely known.
3 Q. But you didn't review them.
4 A. I did not.
5 Q. And so you go on to-- I, I don't want to flog
6 the Texas Instruments too much because we've discussed it ad
7 nauseam elsewhere. I think we talked about your citation of
8 it here. So I'll just, move to the next thing, which is--
9 okay, so you say that HP could have designed a safety system
10 to disconnect the power. You see that?
11 A. That's correct, yes.
12 Q. And in support of that, you cite Mr. Pipho's
13 testimony at pages 54 to 61, right?
14 A. Yes. If that's 1, 2, 3 and 4. Yes.
15 Q. Correct. That's. No, it's, it's number four.
16 I'm looking at this right here.
17 A. Oh, down at the bottom. Okay. You had it
18 highlighted. Okay.
19 Q. Yeah. It's this, you know, here and then this
20 following. So HP could have designed the system and then in
21 support of that proposition, you say, Mr. Pipho said it was
22 feasible and HP could have implemented it. You see that?
23 A. Yes.
24 Q. I'm reluctant to go through his testimony
25 because it's a kind of long segment, but maybe there's a

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1 good time for a break. Maybe we do just five minutes and
2 you can review these cited pages 54 to 61 and then we can
3 come back at 20 til. Does that sound good?
4 A. Sounds good. Can you put. I don't have access
5 to that, of course.
6 Q. I apologize. Let me send you it right now. Is
7 that okay, Steve? If I email this directly to the witness?
8 MR. SCHWARZ: Sure, just copy me in.
9 MR. LEVITES: Okay.
10 MR. SCHWARZ: And I'm assuming you're not
11 going to finish by five, right?
12 MR. LEVITES: I'm going to try my damndest.
13 I'm going to try my damndest.
14 MR. SCHWARZ: I've got a 6 o'clock flight.
15 I can get somebody to step in for me.
16 MR. LEVITES: I appreciate that. I'm going
17 to go as fast as I can. I mean, we're almost done
18 with the report. We have the rebuttal, but I
19 think we've covered many of the topics.
20 MR. SCHWARZ: Okay.
21 MR. LEVITES: So I'm optimistic, but, you
22 know, I will. I'm doing my best.
23 MR. SCHWARZ: All right. I'll get it back
24 up just to be safe.
25 MR. LEVITES: I appreciate it.

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1 Q. Okay, where's this-- I may not have the witness
2 here. Okay, so what's your email address, Dr. Martin?
3 A. S.W. Martin, S-W-M-A-R-T-I-N at I-A State dot
4 E-D-U.
5 Q. Okay, so I just sent that off to you. You
6 should get it momentarily. A copy to Steve.
7 A. Perfect.
8 Q. And then maybe we do ten minutes or something?
9 3:45?
10 A. 3:45 sounds perfect.
11 Q. Right. All right, see you guys in a little bit.
12 A. Thank you.
13 Q. Oh, I can leave this report up, too.
14 A. Okay.
15 Q. You can see the portion there.
16 A. And the section you want me to read is page 54
17 through 61?
18 Q. Yep. And the reference citation, you can see
19 there on the screen. The context within your report. All
20 right, see you in a little bit, Dr. Martin. Thank you.
21 A. Thank you.
22 (Whereupon, a brief recess was taken.)
23 MR. LEVITES: Back on the record.
24 EXAMINATION
25 BY MR.LEVITES:

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1 Q. Okay. So, Dr. Martin, before our break, we were
2 reviewing pages 24 and 25 of your initial report here and
3 the cited citation to the testimony of David Pipho that this
4 was, this safety system you describe was a feasible design
5 that HP could have implemented. I asked you before the
6 break to review the cited pages 54 through 61, which I sent
7 to you under separate cover. My question to you now, Dr.
8 Martin, is can you identify the lines that support the
9 assertion that this was a feasible design that HP could have
10 implemented?
11 A. So it's a couple pages long. So, there's two
12 parts of it-- is-- could it be implemented? And then the
13 second part is, you know, what would happen if it didn't
14 have the signal, the temperature not coming back from it?
15 And it says-- so on page 58 on line 5 says, question. And
16 so it seems to indicate that the thermistor that's in the
17 battery pack would report directly to the motherboard. Yes.
18 And it wouldn't report through to the fuel gauge. That
19 would be a separate process. Yes. And this-- yes, in this
20 specification, that appears to be the case. And then it
21 goes on. Are you familiar with the technologies to
22 accomplish that interaction generally. So it says that when
23 the thermistor reports temperatures, that is something
24 called an embedded controller, inhibit charging of the
25 battery. Do you understand what that means? Yes. And can

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1 you describe, in other words, does that mean if the
2 temperature exceeds 45 degrees Celsius, that something on
3 the motherboard will disconnect to the battery pack? I
4 believe that is the case, yes. And you know how that is
5 accomplished? I not precisely know. In general, the
6 embedded controller that communicates with the battery will
7 also communicate with a separate device called a charger,
8 and it would communicate to the charger to stop. And once
9 the charger stopped and whatever the condition was that
10 causing the excessive heat would stop. Yes, that would be
11 the case. So they're talking about that this is a separate
12 device that could be implemented. He's well aware of all
13 the details of how it could be implemented and how it would
14 work.

15 Q. So I understand that the testimony that you
16 cited to us, which I believe began on 56 and continued
17 through 59, that in that testimony, Pipho explains how this
18 would work and he understands the mechanism. My question's
19 a little bit different, though. I'm asking which parts of
20 his testimony suggest that it was a feasible design that HP
21 could have implemented in December 2010?

22 A. So in page 61, so that technology that we just
23 described could exist. Question. So that technology could
24 exist, something that could be built into the motherboard to
25 have that reaction when it was plugged into a-- when a

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1 technical possibility and feasibility and. And ability to
2 be implemented are different. And then further than that--

3 MR. SCHWARZ: -Object to the form of the
4 question. I disagree with that definition.

5 MR. LEVITES: -I'm not done with my
6 question.

7 MR. SCHWARZ: Well, then you made a
8 statement.

9 MR. LEVITES: I'm trying to get to the
10 question, Steve. I'm not trying to jam them up or
11 anything.

12 MR. SCHWARZ: Well, we can stipulate that
13 Pipho says possible, and Dr. Martin's report says
14 feasible, but we're not stipulating to they're
15 different.

16 MR. LEVITES: So can we stipulate that
17 they're the same?

18 Q. Dr. Martin, do you believe that feasible and
19 possible are the same thing?

20 A. In this construct, feasible and possible are the
21 same thing.

22 Q. Okay, so that's where you get the word feasible
23 from. Where do you get December 2010 from?

24 A. I'm sorry?

25 Q. So in your report, you say this was a feasible

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1 battery pack lacked that safety features, Correct? Yes, it
2 is technically possible.

3 Q. Okay, so you're citing pages, page 61, lines 2
4 through 8, in support of the notion that it was a feasible
5 design that HP could have implemented in December 2010?

6 A. Yes, because he's a technical person from HP
7 saying, yes, it is technically possible. And, and if he's
8 from TI, he's saying, yes, it's technically possible by TI.
9 If it was not technically feasible by TI, then he would have
10 said, no, we can't do that. But he says, yes, it's
11 technically possible.

12 MR. SCHWARZ: Do you mean HP or TI?

13 A. I'm sorry, HP. Yes, yes.

14 Q. And, Dr. Martin, there was one other kind of
15 slippage in your answer there, where you went back and forth
16 between possible and feasible. Are those words synonymous
17 to you?

18 A. I'm just read-- I'm-- I think you used feasible.
19 I think maybe feasible is in my report, and possible is used
20 in the deposition. I don't know. I can't look back and
21 forth that fast.

22 Q. Yes, you've hit on it exactly. Dr. Martin,
23 that's why I want you to look at this testimony, because I
24 understand what you're saying here, and, and I agree. Mr.
25 Pipho said it was technically possible. My question is

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1 design that HP could have implemented. I presume you mean
2 at the time of manufacture of this notebook, otherwise it
3 would not be relevant. Right?

4 A. Yeah. HP could have implemented this well
5 before 2010 because thermistors are a technology that are
6 known more than 50 years ago. So thermistors are well
7 known. There's nothing new in thermistor technology. So
8 thermistors predate 2010 by 40 years. So it need not be
9 stated that, you know, thermistors were unique at this
10 particular time. They were not.

11 Q. And again, Dr. Martin, I'm not suggesting that
12 they were unique. What I'm asking you is the only citation
13 in this section in support of the notion that HP could have
14 actually implemented this way back in 2010 is to David
15 Pipho. And we just went through his testimony. We see
16 where he says it was technically possible. He says that--
17 he also says that it was never such a solution, was never
18 actually discussed. But be that as it may, where does--
19 where are you getting the notion that it could have been
20 implemented in December 2010 in Pipho's testimony that you
21 cited here? Is it there or is it-

22 MR. SCHWARZ: -So I'm sorry, let me just
23 object to the form of the question you just
24 tested-- you just stated in your question that he
25 didn't use the date 2010 in his report. So he

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1 didn't state that Pipho said he could do it in
2 2010. He stated that HP could do it in 2010. So
3 I just want you to just set that question up
4 correctly, that he didn't use the date 2010 in his
5 report.

6 MR. LEVITES: I understand.

7 Q. And, Dr. Martin, to be clear for the record,
8 your report says Mr. Pipho testified this was a feasible
9 design that HP could have implemented. Am I correct to
10 understand that sentence, to signify that HP could have
11 implemented it in Ms. Marcellin's notebook, which was
12 manufactured in 2010. Am I correct?

13 A. Yes, you are.

14 Q. Okay, so with that understanding, my question to
15 you is, where in Mr. Pipho's testimony that you cite, does
16 it suggest that this could have been implemented in 2010?

17 A. Because in the, in the overall context of, of
18 this discussion, and it's earlier than, than line 18 on page
19 61, the question was, at any point in your career, Mr.
20 Pipho, either or anytime after the meeting ten years ago,
21 did you have any involvement in battery authentication
22 systems that were either contemplated or installed in
23 laptops and he's, he's saying, can you repeat that? And he
24 says, I've been involved in some discussions. Yes. So I
25 take that to mean that over Pipho's career at HP, which

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1 spans before 2010, that they're involved in these
2 discussions to, in the context of authentication systems and
3 thermistors for safety, that he was involved in those
4 discussions and it was likely, therefore, that HP was
5 already discussing these, but did not implement them.

6 Q. Do you know what warnings accompanied the
7 Pavilion notebook? Dr. Martin?

8 A. I'm sorry again, please?

9 Q. Do you know what warnings accompanied the
10 Pavilion notebook?

11 A. I did not look in the Pavilion manual, but it's
12 possible that they're in there. I just not-- I did not
13 review that.

14 Q. So I'll represent to you, Dr. Martin, that there
15 was a warning in the manual that you referenced that states,
16 warning, to reduce potential safety issues, use only the
17 battery provided with the computer or replacement battery
18 provided by HP or a compatible battery purchased from HP.
19 Now, Dr. Martin, would this warning, had it been heeded,
20 have prevented this accident?

21 MR. SCHWARZ: Object to the form of the
22 question outside the scope of his report and his
23 expertise.

24 A. Yeah, I don't, I don't-- that's a sociology
25 question. Whether something written like that, people obey

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1 or not? And I, I won't, I don't, I can't speculate on that.

2 Q. If you could hold on, Dr. Martin, I'm asking you
3 to assume that this warning was heeded, meaning whoever read
4 it, followed it. If they followed this warning, would that
5 have prevented the fire?

6 MR. SCHWARZ: Again, objection to the form
7 of the question outside the scope of his, his
8 testimony and his expertise.

9 A. It caused, it causes me to speculate, and I--
10 it's also true that normal authenticated batteries fail and
11 catch fire all the time. How many Tesla battery fires have
12 there been, for example?

13 Q. But, Dr. Martin, before we go into Tesla
14 battery fires and stuff, you're not suggest-- this case is
15 about the, the counterfeit battery, right? You're not
16 suggesting that there was an original battery and this
17 notebook, right?

18 A. No, you are suggesting it. You're suggesting
19 that if there had been a proper battery, there would have
20 been no fire, and that's not true.

21 Q. Oh, and you're, you're saying that a certain
22 number of all batteries fail just because of statistics, and
23 that's just how it is for the reasons you described earlier,
24 manufacturing defects and so forth. Foil in the, in the
25 cell and what have you. Is that fair to say?

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1 A. No, it's not fair to say, that batteries that
2 are protected by battery safety systems are far less likely
3 to have a fire. Batteries that have no safety features,
4 especially connected to computers that have not implemented
5 any safety features, are more likely to catch on fire. So
6 to say that just because the-- if the battery was proper,
7 there would be no fire, that is not correct. There could
8 likely be a fire. It's perhaps less likely, but there
9 certainly can. And there certainly are fires for batteries
10 that are perfectly authenticated.

11 Q. Right. But there's definitely more fires and
12 more risk with a counterfeit battery, right? That's what
13 your whole report's about.

14 A. No, it is not.

15 Q. Well, that's one of the thrusts of your report,
16 is it not?

17 A. No, it is not.

18 Q. So counterfeit batteries aren't dangerous?

19 A. I'm saying in this particular instance, when HP
20 does not have any, does not implement any authentication
21 procedures to authenticate a battery, whether it's an
22 authenticatable battery or non authenticatable battery, that
23 puts the user at great risk.

24 Q. I didn't, I apologize, Dr. Martin. I didn't
25 really understand that. Maybe we can go at a different-- go

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1 at this a different way. So, Dr. Martin, is it your
2 testimony today that had a-- that had the notebook, the
3 Marcellin notebook, had a-- the battery provided with the
4 computer, a replacement battery provided by HP or a
5 compatible battery purchased from HP installed in it, it
6 would be less likely to have caused this fire?

7 A. No, it's not my testimony. I'm only here to
8 describe what's in my report. And I don't, I don't address
9 the possibility of fire occurring in a authenticable and OEM
10 approved battery.

11 Q. Is an authentic and OEM approved battery safer
12 than a counterfeit battery?

13 A. I could consider them to be safer, yes.

14 Q. Okay. Now in this final opinion here, you state
15 that it was-- that the Marcellin notebook was defective
16 because it lacked battery authentication or other design
17 that would have prevented the user from unknowingly
18 operating the subject laptop with an unauthorized battery
19 pack. My question, Dr. Martin, is when you say preventing
20 the user from unknowingly operating the subject laptop with
21 an unauthorized battery pack, I understand this to mean you
22 are referring to a user who purchases and installs a
23 counterfeit battery but does not know it is counterfeit. Am
24 I right?

25 A. Where is the statement? So I'm sure of this?

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1 Q. It's sub F.

2 A. Got it. Yes, it's, they're not aware that the
3 battery was unauthorized. That's correct.

4 Q. Right. But my question is, are you referring to
5 a consumer who purchases and installs a counterfeit battery
6 but doesn't know it's counterfeit? When you say unknowing,
7 is that what you mean? Because that's what I understand it
8 to mean, but I want to confirm that.

9 A. Yeah, they don't know that the battery is
10 unauthorized. They think it is authorized.

11 Q. They've purchased it from what they believe to
12 be a genuine source, and it comes with markings or whatever.
13 They think it's the real deal, but it's not?

14 A. I think that's correct, yes.

15 Q. Okay. And then that would be installing it. Is
16 the consumer, quote, learning the hard way, in the parlance
17 of that TI report we marked as Exhibit 3?

18 A. No.

19 Q. And why isn't that the case?

20 A. Because if the battery doesn't fail, then
21 they've not learned the hard way. If the battery fails and
22 they have a big, bad fire like this one, then they've
23 learned the hard way.

24 Q. Okay. And you don't-- you know, we talked about
25 this, the battery was counterfeit, right?

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1 A. I think many people have opined it, yes, the
2 battery was counterfeit.

3 Q. Including yourself.

4 A. Yes.

5 Q. And you're aware that Ms. Marcellin said she
6 never changed it, right?

7 A. That's what she says. That's correct.

8 Q. Do you have any opinion as to how that battery
9 got in there?

10 A. I do not. Oh, sorry--

11 MR. SCHWARZ: No, go ahead.

12 Q. Factually, do you have any evidence that the
13 battery pack was changed by someone other than Ms.
14 Marcellin?

15 A. I have no information at all about how that
16 counterfeit battery ended up in that laptop.

17 Q. Other than her testimony?

18 A. Other than her testimony.

19 Q. Okay. Would you agree with me, though, that if
20 the notebook was manufactured in 2010 and the battery was
21 manufactured in 2015, then as a simple matter of chronology,
22 it could not have been in this notebook when Ms. Marcellin
23 bought it?

24 A. I think that's correct, yes.

25 Q. Okay, so we're left with a mystery, right?

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1 A. I'm not left with a mystery, no.

2 Q. Why aren't you left with a mystery?

3 A. That's beyond the scope of my work. To me, no
4 offense, it was irrelevant where or who or how that battery
5 was in that laptop. What is relevant is the relationship of
6 that battery to the laptop.

7 Q. Okay. Would you agree that me and Steve have a
8 mystery then, as to how it got in there?

9 MR. SCHWARZ: I think it's irrelevant, too.

10 A. I can't speak to that. How you or he think
11 about this.

12 Q. Okay, but. So you have no idea how this battery
13 pack got in that notebook computer?

14 MR. SCHWARZ: He said that four times now.

15 Q. Okay, I just--

16 A. -I just repeat what Ms. Marcellin said. She
17 does not know how the battery that got in there.

18 Q. And you didn't speak with her, right?

19 A. I did not speak with her.

20 Q. Do you, and I think you just kind of test-- you
21 said you just testified it was irrelevant where or who or
22 how that got in the laptop, right?

23 A. It's a little bit strong. It was beyond the
24 scope of my work to dig into the details of where that
25 battery came from because it was already in the laptop and

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1 it caused the fire. The question is why did it cause the
2 fire?

3 Q. Right. So my question to you though is why
4 isn't it important for you to know this? Because if
5 Marcellin didn't put the battery in and that means someone
6 else did it, right? Was that a yes?

7 MR. SCHWARZ: Object to the form of the
8 question.

9 A. As the engineer asked to look at a very specific
10 question. Why did this battery cause the fire? I take the
11 point of my work to begin not when the laptop was purchased,
12 but when the lap-- or at least the part of why did the fire
13 start from when the lap-- when the, the battery caused the
14 fire, and moving forward. How it got there is another
15 aspect of the matter, but not relative to why it caused the
16 fire.

17 Q. Okay, so the reason I'm-- I appreciate that and
18 that's a very straightforward way to get at it. I want to
19 explain why I'm asking these questions. So if we, if it
20 wasn't Ms. Marcellin, if we're crediting Ms. Marcellin's
21 testimony as you are in your report, that means that
22 necessarily someone else must have put this counterfeit
23 battery into the notebook. And if it was someone other than
24 Ms. Marcellin, how would you know or anyone know if anything
25 else was done to the computer?

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1 MR. SCHWARZ: Object to the form of the
2 question. You can answer it.

3 A. Because as I explained earlier in the day, I did
4 inspect the laptop, okay. It was caught on, it was burned
5 and so forth. I didn't see any evidence that there was any
6 significant tampering or any other significant changes to
7 the battery. That's the first point. Second point, the
8 most simple thing to change is the AC adapter power pack.
9 It was not changed. So if anything could be changed, that
10 was the one that might be changeable. And then the other
11 thing is it would be inconsistent with Ms. Marcellin
12 changing anything on the laptop. She is a very entry level
13 user of the laptop and she would not have had the skills to
14 change anything in the laptop. And there was no indication
15 that she had major problems with the laptop or service the
16 laptop. She probably would have said that. So I had no
17 indication that there was anything other than a simple
18 battery replacement.

19 Q. So the issue is, though, that someone other than
20 Ms. Marcellin, who none of us have been able to figure out,
21 is the one that did this battery replacement. And you just
22 said that you didn't see any evidence of tampering. So my
23 question to you is, isn't someone installing a spare battery
24 in your computer without your knowledge a counterfeit
25 battery that lacks all the safety features? You wouldn't

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1 call that tampering?

2 A. I'm not going to answer. I can't answer that
3 speculative question because I-- we don't know. We don't
4 know who did it. And so the intimation from your point is
5 it was a nefarious person. It, it could have been her
6 partner, it could have been her son. It could have been
7 someone that could have replaced it. The other thing is she
8 simply confer-- she could have simply forgotten. It could
9 have occurred at a time when there's some stress in her
10 life. It's my understanding that her husband, her partner,
11 is not healthy. It could have happened at a time when he
12 was having episodes, she was having episodes, there's just
13 an innumerable number of scenarios where something
14 completely honest and completely okay to that battery being
15 replaced and she's just not simply not remembering.

16 Q. Okay, so I get that it could have been a benign
17 actor, right? Like her partner might have replaced it and
18 never told her. That's one possibility. But another
19 possibility is that a malign actor is the one that did this.
20 Would you agree?

21 A. No.

22 MR. SCHWARZ: Object the form of the
23 question.

24 Q. You think it's impossible that someone other
25 than her partner or daughter or someone like that put this

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1 battery in there?

2 A. Anything's possible. It's highly, highly
3 improbable.

4 Q. Okay, so it's improbable.

5 A. Yes.

6 Q. A malign actor tampered with her computer, but
7 it is possible.

8 A. It's highly, highly improbable.

9 Q. But we don't know one way or the other. Right?

10 A. That's right. And I'm not going to speculate
11 any more on it than that.

12 Q. Okay. I mean, that makes sense. I mean, we're,
13 that's, that's what I mean when I say we're left with this,
14 with this mystery, you know, situation. Right? And to be
15 clear, I mean, even if it was a benign actor, someone
16 putting a counterfeit part into your notebook computer that
17 has safety risks even with good intentions, would you
18 consider that tampering?

19 A. No.

20 Q. What would you call it?

21 A. Well, again, it goes back to this situation.
22 You buy a battery and you think that it's got all the HP
23 markings on it, it says HP approved whatever on the package.
24 On the outside, everything is copacetic from that
25 perspective, and you know, it's beyond the consumer's

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1 ability to know that the fact that the battery was
2 counterfeit. Your inclin-- your intimation here is that the
3 person knew that the battery was counterfeit. And I never
4 said that. I said unknowingly installed a counterfeit
5 battery.

6 Q. But it could have been knowing too. Right?

7 A. I'm sorry?

8 Q. It could have been knowing too, right. We don't
9 know who bought the battery or installed it, so they could
10 have known it was counterfeit, right?

11 A. The markings on the what were left after the
12 fire. It's my understanding the markings on the battery
13 were consistent markings with HP. There was nothing marked
14 on the battery that clearly indicated that it was not a HP
15 battery. So my understanding of the pictures and reports
16 that I've seen rather suggest the opposite. That in fact it
17 looked like, and of course fit completely in as an HP
18 battery. There was no indication that it was a counterfeit.
19 There was more indication that in fact was an HP battery.

20 Q. Okay, but would you agree it's possible that
21 let's say it was Mr. Hollowell that replaced the battery.
22 Couldn't he have looked on Amazon, seen an authentic-- the
23 price of an authentic battery and the price of a purportedly
24 authentic one, deduced that the counterfeit one was just as
25 good as many people do at gas stations and wherever,

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1 purchased it, thinking there was no safety risk, but that,
2 you know, it was just, you know, paying more for a brand
3 name. And so he was knowingly installing a counterfeit
4 battery. Isn't that a possibility? We know the--

5 MR. SCHWARZ: Object to the form of the
6 question. You're saying a counterfeit battery
7 that was marked and labeled as an HP battery?

8 Q. Yes, I'm saying someone could knowingly purchase
9 something that had HP marks and still know its counterfeit.
10 Right? Just based on the price difference we talked about
11 earlier.

12 MR. SCHWARZ: That's some speculation. I'll
13 object to the form of the question. Try to answer
14 it if you can.

15 A. No, I won't agree with that line of thought
16 because it's inconsistent with the markings on the battery.
17 The markings on the battery, even the battery was retained,
18 received from the fire, were consistent with HP markings,
19 not something inconsistent with HP markings. There was
20 nothing in the-- nothing on the battery that would lead
21 anyone to believe that it was nothing other than an HP
22 battery. So I don't-- the speculation that it's a totally
23 counterfeit battery that's completely knowable, that it's a
24 counterfeit battery is not appropriate for this particular
25 instance, because this battery had markings that were

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1 identifiable as HP markings. And as a result of that--
2 there aren't many, I agree. And it was very difficult to
3 determine those. But there were markings nonetheless that
4 indicated it's an HP product, not a counterfeit product.

5 Q. So, Dr. Martin, it's your testimony that-- boy,
6 I guess we've been going a while.

7 A. I appreciate your patience.

8 Q. Okay. No, I appreciate yours. You're the one
9 who's has to give the answers.

10 MR. SCHWARZ: I'm losing mine, but go ahead.

11 A. No worries. No worries. Remember, I've taught
12 students for almost 40 years, so--

13 Q. I appreciate that. So we talked about--you said
14 you just explained why you think it's very, very unlikely,
15 if not impossible, for someone to have knowingly installed a
16 counterfeit battery. Someone other than Ms. Marcellin. But
17 would you agree that at a minimum, someone other than Ms.
18 Marcellin unknowingly installed a battery. Counterfeit
19 battery in her computer?

20 A. Yes, I think that's possible.

21 Q. Okay. I want to talk about another possibility,
22 sir, which is that Ms. Marcellin did it and that she changed
23 the battery. Are you aware that Ms. Marcellin previously
24 stated she purchased an aftermarket battery?

25 A. No.

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1 MR. SCHWARZ: Object to the form of the
2 question. Show him the testimony, please.

3 MR. LEVITES: I'm just asking questions
4 right now.

5 MR. SCHWARZ: I know, but if you. If you're
6 going to say that she said something, then you
7 have to have a basis to ask that question. So
8 show them him testimony.

9 MR. LEVITES: I'll get to it.

10 Q. So, Dr. Martin, you said you weren't aware of
11 this. Did you know that she stated that she had made this
12 purchase in July 2015?

13 MR. SCHWARZ: She said she test-- find the
14 testimony, please.

15 MR. LEVITES: I will. I'm going to show it
16 to him after I finish this question.

17 MR. SCHWARZ: I want to see the testimony
18 before you ask the question or else, I'm not going
19 to let him answer it.

20 Q. Dr. Martin?

21 MR. SCHWARZ: I'm directing him not to
22 answer it. He's entitled to see the testimony.
23 If it exists, he's entitled to see it.

24 A. I would have. You know--

25 MR. SCHWARZ: Just don't-- no, just don't

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1 answer it. Let him show you the testimony.

2 A. Okay.

3 Q. You had no awareness before today that Ms.
4 Marcellin stated she had purchased an aftermarket battery
5 before this fire?

6 MR. SCHWARZ: Object to the question. And
7 I'm going to direct him not to answer it because
8 she didn't testify to that. And show him the
9 testimony, if I'm wrong.

10 MR. LEVITES: I'm not talking about
11 testimony. I said she "stated."

12 MR. SCHWARZ: Well, I don't know where
13 you're getting that from. So show me where you're
14 getting it from? Because I'm not going to have
15 them testify to things that you're making up.

16 MR. LEVITES: Are you saying I'm making this
17 up, Steve?

18 MR. SCHWARZ: I don't know what you're
19 talking about. I've been on this case for a long
20 time-

21 MR. LEVITES: -I will represent to you, sir,
22 that Ms. Marcellin stated in her interrogatory
23 responses in this case, which she later amended.
24 And I will note that, she did later amend it and
25 stated that this was not the case, but she

1 initially answered when asked if she purchased any
2 aftermarket components, that she purchased an
3 aftermarket battery in July of 2015.

4 Q. And my question to you, Dr. Martin, is, were you
5 aware of this?

6 MR. SCHWARZ: I don't believe it. Again,
7 let's-- if it's been amended, then I think that
8 that's a null point. It was a mistake more than
9 anything. So I'm not going to add-- Again, if
10 he's aware that she had an answer that she
11 amended?

12 MR. LEVITES: Yes, that's my question.

13 Q. Are you aware that she stated in this case that
14 she purchased an aftermarket battery in July of 2015?

15 A. I don't remember any context of Ms. Marcellin
16 saying anything about a battery other than-- that she was
17 unaware that it was not purchased by her.

18 Q. Did you review both of her deposition
19 testimonies?

20 A. I'm unaware that she has two deposition
21 testimonies.

22 Q. Okay. Well, I deposed Ms. Marcellin about a
23 year after her first deposition. She was asked about this
24 in her first deposition as well, but I asked her in the
25 second one, too. So during that second deposition, we asked

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1 her about the aftermarket battery. We asked her about the
2 Compaq computer in which she claims it was installed. Does
3 that refresh any of your recollection?

4 A. No, it does not.

5 Q. Okay. Now, if she had purchased an aftermarket
6 battery in July of 2015, would that have been consistent
7 with the 2015 date you located on the battery pack in the
8 Marcellin notebook?

9 A. I think those dates are comparable, yes. Could
10 be.

11 Q. And you didn't know that she had made a purchase
12 at that time on factory outlet store dot com?

13 A. I'm unaware of that particular statement as
14 correct.

15 Q. Did you know that the battery that Ms. Marcellin
16 reportedly purchased-

17 MR. SCHWARZ: -Objection to this new line of
18 questioning, I think you're misstating her
19 testimony. I'm just going to make have a
20 continuing objection to you misstating her
21 testimony unless you show us the testimony.

22 Q. Did you know that the battery Ms. Marcellin
23 purportedly purchased can't be accounted for?

24 MR. SCHWARZ: Object to the form of the
25 question.

1 A. You're dealing with subject matter that, that
2 only you appear to be privy to, understand and have access
3 to-

4 Q. -That's okay.

5 A. -so I can't answer questions that I'm not-- that
6 I don't have access to the information to.

7 Q. Okay. I'm going to put up a few things here,
8 Dr. Martin. I was hoping to just do this as a conversation.
9 And like I said, I made a representation to you. That's
10 okay. I'll put it up.

11 MR. SCHWARZ: Thank you.

12 A. It really puts me in a very awkward place, if
13 you understand.

14 Q. I'm not trying to put you in awkward place. I'm
15 just trying to have a conversation. And this when, when
16 we're able to interact with one another, that facilitates
17 that. But that's okay. I can pull this up and we can go
18 through it. I. I also am, you know, this is partially in
19 the interest of time as well, but that's okay. I will get
20 it for you.

21 A. With all due respect, I don't take this as a
22 casual conversation, so I, I don't have-

23 Q. -I understand, but the dialogue is important for
24 us to, you know, get this done. But that's okay. I'm gonna
25 get this for you. Just give me a moment.

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1 A. And I will say it's presumably you're going to
2 show me something that I've never seen before. So any
3 comments I make about it cannot be taken in their full
4 weight because I have no chance to review it.

5 Q. Yeah. You just testified that you hadn't
6 reviewed her second deposition and you weren't aware of her,
7 of her interrogatory responses. I appreciate that.

8 MR. SCHWARZ: That were amended.

9 MR. LEVITES: All right, I think we're gonna
10 have to take five. Sorry. It's gonna take me a
11 second to get my hands on all this, Steve, So it's
12 probably a good time to stop. So we can come back
13 at 4:30.

14 (Whereupon, a brief recess was taken.)

15 EXAMINATION

16 BY MR.LEVITES:

17 Q. Okay, so we were talking about Ms. Marcellin and
18 some of her testimony. So I'd like to first go to the
19 testimony that you said you did review. Right? You said
20 you reviewed this-- oh, I don't have it up. Apologies. You
21 said you reviewed this testimony. Right?

22 A. I can't tell what that is. Sorry.

23 Q. It's okay. This is Ms. Marcellin's transcript
24 of July 2, 2023.

25 A. Okay.

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1 Q. You need me to page through some more, just let
2 me know.

3 A. Okay.

4 MR. SCHWARZ: We'll stipulate that's what it
5 is.

6 Q. Okay. You reviewed this for your report, right?

7 A. Yes.

8 Q. Okay, I'm going to go to page 149 of the report.
9 Okay, so you see here she says, counsel for Staples, asking
10 Ms. Marcellin the questions. You see those highlighted
11 questions, Dr. Martin?

12 A. Yes.

13 Q. Do you remember?

14 A. I don't remember. Unfortunately, I don't
15 remember any of this. But we can go through it.

16 Q. That's okay. That's all I want to know is what
17 you reviewed, and you know, what's going into your opinions
18 here. So now you can see that Ms. Marcellin testified she
19 purchased an aftermarket battery and installed it in her
20 vintage Compaq computer, right?

21 A. Yes. Not the HP, of course. Correct?

22 Q. Yes. That's what she testified, was that it was
23 in the Compaq.

24 A. Okay. Okay.

25 Q. Now I'm going to show you the interrogatory

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1 response to which I was referring earlier.

2 MR. SCHWARZ: And again, I object because
3 it's been amended. Because it was a mistake.

4 MR. LEVITES: I said that on the record.
5 It's been amended.

6 MR. SCHWARZ: Okay.

7 Q. Do you see that, Dr. Martin?

8 A. Yes. Something about-- okay.

9 MR. SCHWARZ: And it was (inaudible)
10 information and belief. It also says there.

11 Q. So, Dr. Martin, I've now shown you the
12 interrogatory responses and the-- Ms. Marcellin's testimony.
13 So my question is to you, are you now aware that she
14 purchased an aftermarket battery?

15 A. For a Compaq laptop. It's not related to the HP
16 laptop that was on fire.

17 Q. Right, but when I asked you the first time, you
18 said you weren't aware. Now you're saying you are. I just
19 want to make sure.

20 A. Weren't aware of what?

21 Q. I asked you, are you aware she previously stated
22 she purchased an aftermarket battery, period?

23 MR. SCHWARZ: Right. You didn't say it was
24 for the Compaq.

25 Q. Right. I just said an aftermarket battery.

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1 A. Now that's no fair. No fair.

2 Q. I was-- and to be clear, I'm not trying to jam
3 you up. I just am trying to make sure that we have all the
4 facts in front of us.

5 A. I appreciate that. I appreciate that.

6 Q. I'm not going to file a motion and say, oh,
7 well, you know, he-- whatever on some missing word or
8 something. That's-- it's crazy. I just want to know if you
9 were aware she actually had bought some kind of aftermarket
10 battery and testified to that.

11 A. Yeah, I was not aware of this, but I was aware
12 that she, at least what's her testimony was, she had not
13 bought an aftermarket battery for the HP computer.

14 Q. Okay, but she did buy an aftermarket battery.
15 Right?

16 A. Seems like she's saying here, but Steve is
17 saying something that this has been amended. So that's a
18 legal level I'm not aware of. So I don't know what's real.
19 I don't know what's real at this point.

20 Q. Okay. That's completely acceptable. My
21 question to you, which I asked before and you were
22 instructed not to answer, is would that have been consistent
23 with-- would the 2015 born-on date that you found be
24 consistent with this 2015 purchase date, which was later
25 amended?

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1 A. So 2015 is a big long year, and I-- this is
2 dated July 22nd. I don't know what the other dates would
3 be. So it could be consistent. It could be inconsistent.
4 I'm not sure what we're getting at here.

5 Q. Did you know Ms. Marcellin stated that the
6 aftermarket battery that she purchased was in the closet of
7 the office of her house at the time of the fire, installed
8 in her Compaq notebook?

9 A. No. It was my understanding that there was
10 nothing said about the battery. It was my understanding
11 that there was a completely unplugged quiescent laptop,
12 maybe the Compaq, under layers of something in the closet
13 that showed no fire damage. It wasn't plugged in. There
14 was no chance of it going on, causing fire. So I only knew
15 that there was a Compaq laptop that was taken out of the--
16 or stored in the closet that was not part of the fire. I
17 didn't know anything about the battery that was in that
18 Compaq laptop, but I do know that it was definite that it
19 was not plugged in and therefore had no chance of overcharge
20 or over voltage.

21 Q. Understood. Did you know that there's no
22 physical evidence of the Compaq or any of its components?

23 MR. SCHWARZ: Object to the form of the
24 question. I don't understand what you're-- what
25 do you mean there's no physical evidence?

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1 Q. Are you aware. Are you aware of any physical
2 evidence of the Compaq or any of its components?

3 A. Other than-- yes. Other than that it was
4 reported that it was in the closet and removed. Whatever
5 happened to it after that, I don't know, but it was, I think
6 it was a definite that it was there and unplugged and by the
7 fire experts. Found by the fire experts, FRT and others,
8 perhaps. And that it was proven to be unplugged and
9 therefore ruled out as being a source of the fire.

10 Q. So it's your testimony today. That as you
11 understand it, FRT and others recovered or vouchered the
12 Compaq or its components and concluded that it was unplugged
13 at the time of the fire.

14 A. I'm only going by memory from their reports.
15 It's best we look at those reports and confirm that. But
16 that was my understanding. As far as it went for this
17 Compaq laptop, yes.

18 Q. Okay. Would you have wanted to inspect the
19 Compaq at all in forming your opinions?

20 MR. SCHWARZ: Object to the form of the
21 question.

22 A. Not since three fire experts completely ruled it
23 out as a source of the fire. No.

24 Q. But you would expect there to be physical
25 remains of a 90s vintage computer from this fire, right?

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1 A. Not at all.

2 Q. Really?

3 A. No. The house is-- the house was engulfed in
4 flames, and easily you could have thrown away innumerable
5 things in cleaning out after the fire. So whatever happened
6 to that laptop after the fire inspectors service people said
7 that it was not involved in the fire, what happens to it is
8 not of my concern at this point.

9 Q. So if there was no Compaq in the house, you're
10 suggesting that it could have been removed by investigators
11 or remediators, is that right?

12 MR. SCHWARZ: At what point in time are you
13 talking about there being no Compaq in the house?

14 MR. LEVITES: After the fire, after the
15 fire. We know there's no Compaq now. No one has
16 it, so--

17 MR. SCHWARZ: Well, actually, that's not an
18 accurate statement. You're at your fire expert,
19 as our fire expert did, find the Compaq. And if
20 your fire expert had been an expert in this case,
21 instead of bringing in somebody from exponent,
22 they would know that. And you can go into that
23 with Mr. Karazinski, who has pictures of it. So I
24 don't think that this is the right witness to be
25 asking about the fire inspection when he wasn't

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1 involved in the fire inspection, and he hasn't
2 been asked to do anything but determine whether
3 this laptop was defective or, and whether the
4 battery pack went into thermal runaway, which is
5 what is the focus of his testimony.

6 Q. Okay, so, Dr. Martin, would you agree that the
7 temperature of a house fire like this would not cause all
8 the components of a computer to burn?

9 A. Yes, I would agree with that.

10 Q. So you know now that Ms. Marcellin bought an
11 aftermarket battery for possibly her Compaq, possibly for
12 something else.

13 A. I see written here that this document, which I
14 don't know the veracity of this document, says that the
15 plaintiffs were able to locate and purchase from factory
16 outlet an amount of \$16.17. I'm not even-- the purchase was
17 for a replacement value for a Compaq laptop. So, I mean, I
18 can't do anything more than just read what's here.

19 Q. Understood. Okay. So is it possible that Ms.
20 Marcellin put the counterfeit battery in her notebook?

21 A. I'm sorry, which notebook?

22 Q. The subject notebook. I apologize. The
23 Pavilion.

24 MR. SCHWARZ: Put the compact battery into
25 the Pavilion? Is that what you're asking?

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MR. LEVITES: I'll withdraw the question and rephrase.

A. Very highly unlikely. The form factors are all specific, and it wouldn't fit.

Q. The question was-- I'm withdrawing the question. I apologize, Dr. Martin.

A. No worries.

Q. My question is, isn't it possible that Ms. Marcellin purchased an aftermarket battery, a counterfeit battery, and installed it in her Pavilion notebook?

MR. SCHWARZ: I think he's already testified it's possible, because she could have forgotten.

He's already testified to that. Is that what you want him to say?

A. I mean, I think I've said that. I said that she does not remember how the battery was installed in that laptop, and I can make nothing more than that. And I won't say anything more than that. We just have to go by her words. She doesn't remember how it got there. And I'm not going to speculate on whether she did it or somebody else did it. It was in the laptop. It was. And that's all I can say on that matter.

Q. I get it. I mean, I'm-- the difficulty I'm having in defending this case is, you know, I understand what you've said about, you know, it could be heads, it

could be tails. Right? It could have been someone other than Ms. Marcellin that put in the counterfeit battery. It could have been Ms. Marcellin that put in the battery. So I'm asking about the heads part. Marcellin changed the battery and installed it in her computer. And my question is, can you offer any explanation other than her testimony as to why she didn't do it?

A. I'm not going to speculate on it. It's beyond the scope of my investigation. I didn't consider her mental state. I didn't consider her financial state. I didn't consider anything relevant to her or not installing this battery. I just don't have any opinion on any of that.

MR. SCHWARZ: Ben, he wasn't retained or he hasn't been designated to determine who bought the battery. You're acting as if this is part of his report. This is completely outside the scope of his expertise and his report. He's not-- he wasn't a forensic investigator to try to figure out where the battery came from--

MR. LEVITES: -Okay. So I think the next question--

MR. SCHWARZ: -so, you're asking questions that are completely irrelevant to his testimony.

MR. LEVITES: Thank you, Steve.

Q. So you just testified that it's possible that

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Ms. Marcellin forgot that she purchased and installed the counterfeit battery, notwithstanding her testimony, the contrary, due to her age. Is that right?

A. Anything. Anything is possible when she doesn't know what happened. That's correct, yes.

Q. Right. So if you're discounting Ms. Marcellin's statements because of her age, because she might not accurately tell what happened here, does that mean you have to take the rest of what she's saying in this case about what did and didn't happen with a big grain of salt?

A. No, I'm not discounting anything she's saying. You are speculating on possibilities on how this battery got into it. And I'm simply saying I'm not speculating on any of that. And so, as I've tried, I've tried and tried to say I have no opinion on how that battery did or did get into the laptop.

Q. I understand, but I'm asking you a different question about Ms. Marcellin's memory. So would you agree with me there's three possibilities? She put it in herself and knows it, and she's not-- she said something else in her testimony. She put in herself and has forgotten it and truthfully testified that she didn't do it because she doesn't remember or someone else put it in, as she has testified and as others, including yourself, have indicated, was what happened here. Right? Those are the three

possibilities.

A. No, and I'm not going to speculate. There's other possibilities that we have other--

Q. There's other possibilities as to who installed this?

A. There's. If you-- in the absence of any information, which is what we have, you can't speculate anymore. And I'm not speculating anymore. It was beyond scope of my work. And I won't speculate on how the battery arrived into the battery. I don't make any statements of that, to my knowledge, in my report. And it's beyond the scope of my report, and I have no information about how that battery got into it. I'm simply reporting on that date, that time when that battery was in the laptop. Moving forward from that point, and my opinion is it caused the fire.

Q. Then turn to your rebuttal report, which was marked as Exhibit 2.

MR. SCHWARZ: We're at a good point. Josh is going to now take over the defense of the deposition, and I just want to put that on the record. And his name, Cynthia, is in the chat.

MR. LEVITES: Thank you, Steve, and have a safe flight. Good trip. All set, Josh? Nice to put a face to the name to e-meet you.

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1 A. Just for my own knowledge. How-- how many
2 hours? What's the timing?

3 Q. I'm hoping we'll be-- all we need to do is go
4 through your rebuttal report. I have a few more pages.
5 Hopefully I'll be done within an hour.

6 A. Okay. Well, I'm only up for seven hours. How
7 many hours are we in of that?

8 Q. With breaks and things? I don't know. Probably
9 pretty close.

10 A. That's what I'm wondering. What's the policy for
11 going over hours?

12 Q. Well, the issue is we're gonna-- if we're unable
13 to complete your testimony, we're gonna seek to complete it.
14 Because all we're doing is going through your reports here
15 and through no fault of your own. But just because of the
16 volume of the documents and the technical nature, it's taken
17 some time, I think we would both agree. So if we're unable
18 to complete it today, we're going to seek to complete it on
19 another date. So it's, you know, I hope to power through
20 what we have remaining and get it done today and, you know,
21 take it as we go.

22 A. Okay.

23 MR. MANKOFF: And for the record, we would
24 oppose any motion or your seeking to extend the
25 deposition beyond seven hours. That's

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1 presumptively enough for a witness. And I don't
2 think that it's necessary to go beyond that in
3 this instance.

4 MR. LEVITES: I understand, but this is a
5 different situation. But that's all right.

6 We'll-- I'll go as fast as I can, and we'll do the
7 best that we can.

8 THE WITNESS: Ms. Belmonte, can you give us
9 a time on how many hours we are? I mean, if we're
10 seven already, I don't want to go eight. I mean,
11 I'm trying to get-

12 REPORTER: I'm sorry, I wasn't keeping track
13 of that.

14 THE WITNESS: Okay. A little unusual. I'm
15 used to having very tight control over hours.
16 That's okay.

17 Q. All right. I'm turning to Exhibit 2, which is
18 your rebuttal report. The second full paragraph there, you
19 see?

20 A. Yeah.

21 Q. Beginning with Dr. Horn. Is external heating of
22 a battery pack from a pre-existing fire not a well-
23 recognized and common cause of thermal runaway.

24 A. It is not a common problem. More often than
25 not, the problem is caused, as I say here, internal to the

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1 battery.

2 Q. Okay, so you would say it's rare?

3 A. I have no comment on that. I just say that
4 there are well recognized and very common internal causes.

5 Q. And I'm asking you, isn't external heating from
6 an existing fire a well recognized and common cause? Like
7 we look at the wildfires in Maui that set off all those EVs,
8 or the wildfires in California that burned up all those
9 battery supply facilities. Are you familiar with those?

10 A. I'm not familiar with those in detail, no.

11 Q. Okay. Did Larsson use counterfeit batteries in
12 his study?

13 A. Larsson did not use counterfeit batteries.
14 Because when you say counterfeit battery, you mean a
15 counterfeit battery pack. And what makes a counterfeit
16 battery is not the battery per se. Those are commodity
17 items that are manufactured by many different manufacturers.
18 It's a counterfeit battery pack. It's the pack that is not
19 recognized by the manufacturer. The OEM manufacturer. In
20 this case, HP. Larsson, only used what is considered
21 commodity battery cells. And these are neither counterfeit
22 or authentic. They are just battery cells.

23 Q. Thank you, Dr. Martin. And I'm just going to
24 try to blast through these next ones, and I'd appreciate if
25 you could do the same.

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1 A. Oh, sure. Sorry. Do you.

2 Q. Do you consider yourself an expert in battery
3 failure analysis?

4 A. Yes.

5 Q. And what about the failure of 18650 cells?

6 A. Yes, I've studied their failures.

7 Q. Do you consider yourself an expert?

8 A. I am investigating them right here, right now.
9 So, yes, I consider myself an expert of battery failures,
10 yes. 18650s.

11 Q. Okay. What-- how many failed batteries have you
12 analyzed for root cause?

13 A. I've been involved in those cases we talked
14 about earlier this morning. That, it's not a large number
15 of cases, but it's a few cases of 18650 cells failing.

16 Q. Is it your opinion a hot thermal layer would
17 have needed to make direct contact with a notebook surface
18 in order to heat the installed battery pack in the Marcellin
19 notebook?

20 A. Repeat that again, please.

21 Q. Is it your opinion a hot thermal layer would
22 have needed to make contact with the notebook surface in
23 order to heat the installed battery pack?

24 MR. MANKOFF: Object to form.

25 A. I think that's-- I think that's one mechanism. I

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1 don't think it's absolutely necessary, but I think that's
2 one mechanism that is relevant in this particular case.
3 Yes. It didn't happen that way, but it can happen.

4 Q. Okay, and you say here that-- you say here that--
5 - I apologize, I just lost my spot.

6 A. No worries.

7 Q. Hot gas layer would need to be at least 300
8 degrees Celsius and be in contact with a notebook in order
9 to heat the battery pack.

10 MR. MANKOFF: Sorry, can you-- can you--

11 MR. LEVITES: I'm trying to find the quote in
12 here, but--

13 MR. MANKOFF: Okay.

14 MR. LEVITES: A thermal layer. That's what
15 it was.

16 Q. Okay, so here you say thermal layer, excess of
17 300, period of over an hour.

18 MR. MANKOFF: And where is-- when you say
19 "here", where are you referring to?

20 MR. LEVITES: This is his rebuttal report,
21 marked as Exhibit 2 at page three.

22 MR. MANKOFF: Thank you.

23 Q. See that, Dr. Martin?

24 A. Yes.

25 Q. Okay, so is this. Did you just derive this

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1 number straight from the Larsson study?

2 A. That was the finding of the significant study of
3 Larsson's. Yes. Yes.

4 Q. What heat transfer mechanism, in your opinion,
5 is relevant in the Larsson study?

6 A. All three. The batteries are laying on a hot
7 surface of the oven bottom. So that's conduction. There is
8 gas, there's hot air moving inside the furnace. That's
9 convection. And at 300 degrees Celsius, there's also
10 radiation heat flow, and that is also active on these
11 batteries.

12 Q. In developing a fire in a compartment, or in a
13 developing fire in a compartment or a closed room, like the
14 room of origin in this case, how does the hot gas layer
15 form.

16 A. So that I'm not a fire expert, so I can't say.

17 Q. Okay. What's the dominant form of heat transfer
18 from the hot gas layer to a room in a developing compartment
19 fire?

20 A. I'm not-- I don't write on that and I don't
21 speculate on that.

22 Q. Does radiative heat transfer require direct
23 physical contact between the source and the target in order
24 to transfer heat.

25 A. Radiation heat flow is not direct contact.

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1 Q. Okay. And is it your opinion that since the hot
2 thermal layer did not extend down to the laptop, it couldn't
3 have been heated by the hot gas layer?

4 A. No. What I say here is that there was a hot
5 layer that came down and the combination of all of the heat
6 transfer mechanisms, radiation, convection and conduction,
7 all of those created a demarcation line, for lack of better
8 words, of where the burn layer was. And that burn layer did
9 not go down to the height of where the laptop was. So the
10 combination of all the mechanisms of heat flow were not
11 active significantly below that burn layer.

12 Q. Does your opinion set forth in the initial and
13 rebuttal reports consider radiative heat transfer from the
14 hot gas layer to the laptop?

15 A. Yes.

16 Q. And is radiative heat transfer directional?

17 A. It can be.

18 Q. Would you agree that in the room of origin of
19 the fire, the materials that are vertically oriented with
20 more minimal exposed area are less damaged than those that
21 are oriented horizontally with more exposed surface area?

22 A. So this is a complicated-- I've taught this
23 subject. So in radiation heat flow, there's something
24 called a view factor. And a view factor is the geometric
25 relationship of the hot source to the cold source. And a

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1 very simple example is if I've got a 12 foot or, sorry, a 12
2 foot wall and a one foot sheet of paper. The view factor of
3 the one foot, one square foot of paper onto the 12 foot wall
4 is one because the paper is completely heated. So the view
5 factor analysis of this room would be very complicated to
6 develop because of the complex geometries and so forth of
7 the room. But you know, you'd have to look at the view
8 factor analysis to understand other-- of the different heat
9 flow mechanisms, radiation, convection and heat and
10 conduction, which of those were the most important. So I
11 can't opine on that at this point because I've not looked
12 into that.

13 Q. Okay. Would you agree that since the laptop was
14 sitting open on the shelf there on the-- the top of the
15 notebook that's facing the hot gas layer would be heated
16 first and more rapidly than the bottom?

17 A. Not necessarily, because the bottom of the
18 laptop, of course is opened and it's also black. And so
19 black means it's absorbing all the light. The open part is
20 very thin. And so the light on that top edge is less
21 because there's just less area to it. The bottom parts are
22 shielded, you might say, from the heat by the top part. So
23 again, it's impossible to answer that question because it's
24 a very complex calculation of view factors and thermal
25 conductivities. But in general, the bottom of the laptop

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1 could be heated more. It could be heated less, but it
2 depends upon the analysis of the, of the flame.

3 Q. I'm just talking about this notebook in this
4 fire though. So the notebook was open at the time of the
5 fire, right?

6 A. Yes.

7 Q. Okay. And what I'm asking is, since it was open
8 and it's the-- it's facing the gas layer, the bottom of the
9 lap-- the keyboard is facing the gas layer--

10 A. -Yeah.

11 Q. -Wouldn't you agree that that keyboard is going
12 to be heated first and more rapidly than the reverse of the
13 laptop, the bottom that's facing the surface of the desk
14 armoire?

15 A. In general, the bottom of the laptop will be
16 insulated by the top of the laptop? Yes.

17 Q. Okay. And then could radiation rise, raise the
18 temperature of the notebook and the laptop up above the
19 melting point of ABS plastic?

20 A. I think there were-- I don't know if there's any
21 ABS plastic on this laptop. There might be, but I think
22 there were instances that ABS plastic is probably a couple
23 hundred degrees Celsius. So it's possible, yes.

24 Q. And those temperatures would induce thermal
25 runaway?

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1 A. In this case, no, they did not.

2 Q. Is it possible to induce thermal runaway at
3 those temperatures?

4 A. At 200 degrees, it takes much longer, so it'd be
5 more difficult.

6 Q. And this room was a compartment with a ceiling,
7 right?

8 A. I believe it had a ceiling. That's correct,
9 yes.

10 Q. And smoke and hot gases in a compartment are one
11 of the sources of radiant heat, correct?

12 A. It can be.

13 Q. Is it your opinion that the first materials
14 ignited in the room or in the closet?

15 A. It is not my opinion, no. It's the opinion of
16 the three fire experts.

17 Q. Would you agree that the majority of the cans
18 and electrodes in those photographs that were in your report
19 are on the opposite the closet-- opposite side of the room?

20 A. It's my understanding that they were originally
21 found in the closet and then they were taken outside of the
22 closet. So, no, the cans were found originally inside the
23 closet where they started the fire and then they were drawn
24 out. But again, this is in some sense beyond the scope of
25 my report because the fire was started initially at the

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1 laptop.

2 Q. Why is it that there was limited ignition of the
3 combustibles near the notebook location at the armoire,
4 limited ignition in areas where the ejecta, the battery cell
5 ejecta was found, and yet the closet was where the materials
6 were ignited?

7 A. Well, an analogy comes to mind if you've ever
8 lit up a lighter to light your gas grill. There's an
9 orifice and the heat is directional, and nothing behind you
10 catches on fire, but everything in front of you catches on
11 fire. And that's the analogy. I think that's happening
12 here. The batteries went into thermal runaway because they
13 were not safely controlled and shut off by the over voltage,
14 over charging, and they went into thermal runaway. They
15 exploded. And in the process of exploding, it's my
16 understanding, based upon the fire reports, that the
17 components just happened to land in the closet. The closet
18 just happened to have flammable objects in them. And that's
19 where the bulk of the fire started that consumed the room.
20 Yes, there was fire at the source and the laptop. And you
21 saw that there was some burning around the laptop, but that
22 was minimal compared to the fire in the closet. The laptop
23 is marginally flammable. It's meltable plastic. And so
24 it's not going to start a huge combustible flame that's
25 going to catch everything on fire by itself. It's the

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1 batteries that exploded and then that fire ejected and
2 caused the contents-- but that's just based upon the fire
3 reports.

4 Q. Thank you for that. I'm just trying to pull up
5 a picture here. Bear with me one more moment, I apologize.

6 MR. MANKOFF: And while you're doing that,
7 I'll just put on the record that I was in contact
8 with Steve, who said that he kept track of how
9 long you guys have been on the record today. You
10 started at 10:00 and have taken a total of 45
11 minutes worth of breaks. So just for planning
12 purposes, the seven hours will end at 5:45 unless
13 we take another break.

14 MR. LEVITES: Great. Then I may as well
15 just plow ahead.

16 Q. Now. You state at pages five and six in your
17 report--

18 A. Okay.

19 Q. That the underside of the laptop was not burned.
20 It's contrary to external heating. And you also stated
21 there was no significant evidence of extreme temperature
22 heating of the casing of the laptop. Do you remember that?

23 A. No, I don't. I don't see that.

24 Q. That last. It's the first full sentence of the
25 paragraph beginning immediately below Figure 2.

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1 A. Okay. No significant evidence of extreme
2 heating of the casing of the laptop. Yes.

3 Q. So I wanted to show you one of the pictures that
4 you produced with your reports. See that?

5 A. Yep.

6 Q. All right. So would you agree the plastic parts
7 are melted and deformed in this picture?

8 A. I would say they're deformed. They're not
9 melted. They. You still. They're melted. They're turned
10 into a pool of liquid. So they're. They're deformed.

11 Q. Okay. So would you agree that four of the six
12 cells in the HP notebook experienced thermal runaway?

13 A. I think that's correct, yes.

14 Q. And would you agree that all four cells that
15 experienced thermal runaway showed signs of decrimping?

16 A. Yes. They were vented. That's correct.

17 Q. And would you agree that all four cells that
18 experience runaway ejected cell windings during the event?

19 A. Yes, that's correct.

20 Q. And would you agree, consequently, that those
21 four cells experience thermal events of similar energy
22 levels?

23 A. No, because two of the cells. I'll just end it,
24 no.

25 Q. And why is that?

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1 situation that they would behave differently.

2 Q. Okay, so you would expect one block to have
3 higher levels of thermal damage than the others?

4 A. No, I didn't say that. What I said was it's
5 possible-

6 Q. -Possible. It's possible, okay.

7 A. It's possible, like we saw here, that two cells
8 were more violently exploding, two cells rejecting, and two
9 cells were not damaged. That's consistent with one possible
10 scenario of failure.

11 Q. Okay, so we talked, we're talking in
12 possibilities, and I understand, you know, that this is a
13 stochastic process and you can't, you know, there's no, you
14 know, weatherman for this kind of stuff. Right? But my
15 question is, when you say it's possible, do you mean it's
16 more like, is it probable? Is it more likely than not? Is
17 it less likely? Could you quantify it in any way?

18 A. No, just simply say what I said in my report,
19 that it appears that thermal runaway was more strongly
20 evidenced in two cells that caused thermal runaway into
21 adjacent cells, and their thermal runaway with ejection was
22 less energetic than the exploding cells, and therefore the
23 final two did not undergo thermal runaway. That's no more
24 than what-- it's all I will say. I just what I've said in
25 my report, that defining the behavior of those six

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1 A. Two of the cells were simple ejection and the
2 other two were exploded.

3 Q. In an overcharged scenario of a battery pack
4 with three cell blocks, would you expect one of the blocks
5 to show higher thermal damage during a postmortem analysis
6 than the other two?

7 A. It depends on whether the batteries were all
8 going into thermal runaway at the same time or did they go
9 into thermal runaway at different times.

10 Q. So you can't say one way or the other?

11 A. About what?

12 Q. Speaking generally, in an overcharged scenario
13 of a battery pack with three block-- with three cell blocks,
14 you wouldn't expect one way or the other for one cell to
15 exhibit higher levels of thermal damage in a postmortem
16 analysis than the other two blocks?

17 A. Yes, I would imagine that would be the case.
18 It's like, it's likely that, and during the manufacturing
19 process, it's a distribution curve, it's a bell curve we
20 call of quality. And some cells are really good. There's
21 no metal particles floating around. There's no problems
22 with them. Others there are. And as a result of that,
23 you'll have-- you don't-- would not expect all six to behave
24 identically. And they behave similarly, but not
25 identically. So it's very likely that in a general

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1 particular cells.

2 Q. Right. And so we have these two cell blocks
3 that experience thermal runaway, right?

4 A. Yes.

5 Q. Four cell. Two cell blocks.

6 A. Yeah.

7 Q. Okay. And they had similar damage patterns?

8 A. No, they had very different damage patterns.
9 The two together were similar. Two were exploded, two were
10 just simply ejected.

11 Q. Okay, and so that's the difference, the
12 explosion versus the ejection?

13 A. Yes, very much so.

14 Q. Since only two of the three blocks had the
15 similar damage or somewhat similar damage, would-- is that
16 consistent with an overcharge?

17 A. I'm sorry, what? Sorry, I missed that one. I
18 thought I had it, but I didn't.

19 Q. Okay, so you just testified that you had two
20 cell blocks that experienced thermal damage?

21 A. No. Oh, two cell blocks. That's correct.

22 Q. Two cell blocks, four cells? Right?

23 Q. So my question is, with two cell blocks
24 experiencing thermal damage and one not, is that pattern
25 consistent with an overcharge?

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1 A. No, it's consistent with it, but I don't-- it's
2 impossible at this point in time with the study that I
3 conducted to say which particular mechanism caused the
4 thermal runaway.

5 Q. How would you determine the thermal runaway
6 onset temperature for a cell like this? Like the one that
7 was used in this Marcellin notebook?

8 A. I would do a similar. I would do a study very
9 similar to Larsson. There's probably, and I expect there to
10 be, ASTM, American Society of Testing and Methods, ASTM
11 standards on how to do that. So I'd follow that up. But
12 measuring the temperature in what's called an arc, a big
13 calorimetric bomb that you heat and then you measure the
14 temperatures where thermal runaway begins.

15 Q. And you told me already cell chemistry affects
16 the runaway onset temperature, right?

17 A. I believe it does, yes.

18 Q. And cell manufacturing quality would affect the
19 onset temperature as well?

20 A. Yes, yes, it would.

21 Q. If an 18650 cell was operated outside its
22 specification, would that degrade the cell over time?

23 A. Yes.

24 Q. And would that make it more likely to fail when
25 subjected to external heating?

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1 A. Surprisingly not. As shown in the Larsson
2 study, they had, I don't know the number-- was it 15 or 12
3 cells that had all had different charging thermal histories.
4 Some were old, some were new, some were highly charged, some
5 were overcharged, some were undercharged, but all of their
6 onset times and temperatures were very similar. They all
7 onset at about 300 degrees. They all onset thermal runaway
8 between 60 minutes and 70 minutes. So even though they had
9 vastly different abuse levels, you might call them vastly
10 different charge levels, vastly different state of charge
11 levels, they all tended to go off at about the same time.
12 And that's primarily because the chemistry of lithium-ion
13 batteries is very, very similar. They're slightly different
14 additives and so forth, but they're all very, very similar
15 because they're commodity materials, now.

16 Q. I think we, I think I asked this in a different
17 way, and I apologize, but this counterfeit battery pack, it
18 did not have the proper protection circuitry to ensure that
19 the cells were operating within their intended
20 specifications. Right?

21 A. Delicate question. Refine it just a little bit.
22 It had, it had a chip. It's just that the chip wasn't
23 enabled to do the things that it should have done.

24 Q. Okay.

25 A. On top of that, the laptop computer did not

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1 enable the authentication, so it was a doubly bad situation.
2 The computer didn't have the authentication to even check,
3 and the safety features of the chip were not enabled. So
4 it's a double bad situation.

5 Q. Okay. Is it possible that this counterfeit
6 battery pack could have subjected the cells themselves to
7 electrical abuse?

8 A. Anything is possible, but very improbable. But
9 the reason being that-- let's take it on face value, the
10 battery pack was 2015, the fire was in 2020. So there's
11 five years. I think we have to agree maybe, possibly at
12 face value, that battery was operating just fine. Right?
13 And so then something triggered the battery itself and
14 that's where the, the damage was occurring. So the battery
15 themselves were able to withstand some level abuse for some
16 time, but then they failed. So I don't think it's
17 consistent that the, the circuitry of the battery pack
18 caused the problem. It's just the more likely aspect is the
19 battery pack. The battery cells itself failed.

20 Q. But the battery pack could have degraded the
21 safety characteristics of the cell if this had happened.
22 Right?

23 A. It's-- anything's possible, but highly
24 improbable based upon what I've just said.

25 Q. Well, I understand it's improbable. You just

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1 testified it's improbable that the battery pack would have
2 subject the cells to abuse. But I'm saying if that were in
3 fact the case, although improbable, would that degrade the
4 safety characteristics of the cells?

5 A. Surprisingly not. Remember as I said in the
6 Larsson report, it didn't change--

7 Q. --Analysis as before. With the charging cycles
8 and so forth?

9 A. Right, right. It didn't change.

10 Q. So we would just refer to Larsson to get.

11 A. Yeah. So what would happen. What would happen
12 is not the fire abuse thermal runaway, which I think is what
13 you're referring to, but what it would do do is change the,
14 the amount of charge that the battery supplies and the
15 lifetime of the battery. The benign degradation of the
16 battery. It would change, but it appears not to change the
17 thermal runaway characteristics.

18 Q. Would you agree that cells exposed to high
19 temperature temperatures-- I'm sorry, strike that.

20 A. No worries.

21 Q. What temperature is required to pass the oven
22 test? If you know.

23 A. I don't think I know off the top of my head.

24 Q. Okay.

25 A. I didn't know that there was, you know-- there

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1 might be one. But not off the top of my head. I don't know
2 the answer to that. I know what temperature it takes. You
3 know, typical cells will go into thermal runaway when heated
4 above 200 degree Celsius. It takes a 300 degree oven to get
5 it to that. But that's into thermal runaway.

6 Q. But whatever the temperature is required to pass
7 the oven test, would you agree that cells exposed to a
8 temperature higher than that are susceptible to experiencing
9 runaway?

10 A. No, it has to be much higher than the oven test
11 is probably on the range of 40 to 50 degrees Celsius,
12 possibly 60 degrees Celsius. And the batteries really don't
13 undergo thermal runaway till 200 degrees Celsius. So I
14 think what we're talking about is if you stay under 60
15 degrees and cool it off, the battery, it's not a good thing
16 to do to the battery, but it's not so terribly damaged. 60
17 to 170, 180, then it won't go into thermal runaway. But
18 when you cool it back down and try to use it, it's not the
19 same battery. You damage it. And then above 200 degrees is
20 where the battery then is irreversibly thrown into thermal
21 runaway.

22 Q. That's when you get popcorn?

23 A. You get popcorn on fire. Right? Popcorn on
24 fire and really sticky, nasty popcorn. It's got metal in it
25 and all kinds of nasty things that carry heat with it. So.

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1 Q. And you didn't review any supplemental testimony
2 by her when you prepared your rebuttal report?

3 A. I don't believe so, no.

4 Q. This is something I just conceptually don't get.
5 I mean, you stated in your initial report that HP could have
6 programmed the system to shut down if it didn't receive
7 varying signal temperatures. Do you remember that?

8 A. Yes.

9 Q. So the question that I-- this is the part that I
10 don't understand. Isn't it true that the temperature of a
11 battery pack in a notebook computer with low use in a
12 temperature controlled environment could actually be stable?
13 Like if I'm in this room, in my office, you know, AC is on,
14 all I have on is Zoom. Computer's cool to the touch. Isn't
15 it possible that the battery temp could be stable during a
16 like use like this?

17 A. No, the battery temperature is always changing,
18 right? Because the battery, as the battery discharges it,
19 you know, gets hot and as the battery, as the battery
20 charges, you know, it's constantly cycling in temperature.
21 So you know, you have this experience, I'm sure sometimes
22 you'll touch your cell phone, especially after it's been
23 discharged. You charge-- it's warm. So no, just because
24 it's sitting in a room depends upon what's going on in the
25 battery. Our cell phones are particularly, they're safe

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1 Q. So we talked about. I'm just going to put it up
2 quickly, just so you can see it. I think you said you
3 didn't review this-- her-- the deposition that I took of
4 her. And it's very short on July 9, '24? It's a second
5 deposition.

6 A. I. I don't. It's possible I looked at it, but
7 I don't remember it. No, sir.

8 Q. And then there was a sworn declaration that Ms.
9 Marcellin prepared on December 28th, '24 that was produced
10 along with your report and photos. Did you review that
11 declaration?

12 A. Well you said something that concerns me? I'm
13 not familiar with the December 22nd declaration of Ms.
14 Marcellin but you said that it was included along with my
15 report as it was a part of my report?

16 Q. No, it was not. And I'll be very clear. It was
17 not included as a part of your report and it wasn't listed
18 in your list of references.

19 A. Okay.

20 Q. Produced along-- at the same-- we received your
21 report, FRT, and then this supplemental declaration, some
22 photographs that you had taken at your office. It was all
23 in one batch. So I'm asking if you had seen that
24 declaration. You're saying you haven't seen it?

25 A. I don't believe I have, sir.

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1 because there's such a small battery in them, but they're
2 unsafe because there's no cooling mechanism. So it just
3 depends on--

4 Q. -My MacBook has a fan?

5 A. Yes, exactly. That's exactly why it does it.

6 Q. Okay, so is it fair to say, am I understanding
7 you correctly, to say that even in a, you know, stable, low
8 use temperature controlled room, you would expect some
9 variation even if it's close, like maybe it's not up and
10 down, but maybe it's a little more flat, but you would
11 expect some kind of variation? Fair to say?

12 A. Yep. Yeah.

13 Q. Okay, that's helpful. And then you go on to say
14 that authentication systems that counterfeiters need to, you
15 know, reverse engineer them and that it, and design a system
16 to defeat it and that cost them money. And I understand
17 that this makes, this makes logical sense. Right. But I'm
18 wondering if there's anything else in the record. The stuff
19 we reviewed today, what's in your report and the exhibits
20 there too that supports this assertion, other than the Texas
21 Instruments report, we talked about the gas gauge,
22 specifications that accompany it, your personal experiences
23 with the replacement batteries and your colleagues and so
24 forth?

25 A. I think that's sufficient. I think that's

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1 sufficient.

2 Q. But there's nothing else, though. I'm just,
3 again-

4 A. -Of course there, of course there's many, many
5 documents around the world describing all of this and we
6 just don't, for this particular matter, this particular
7 time, we just haven't brought them in. But yes, of course
8 there's many other documents that I don't have access to
9 right now.

10 Q. Yeah, no, I understand that. I'm just trying to
11 delineate the report because the report is what I have. So
12 that's what I have to work with.

13 A. I think those are sufficient and we can restrict
14 it to that. Yes.

15 Q. You also stated it would be cheaper for a
16 counterfeiter to install a thermistor, install the
17 thermistor that HP required, which would have prevented this
18 temperature condition from occurring.

19 A. Yeah.

20 Q. Than to install a resistor that would defeat
21 authentication. And my question in respect of this is, do
22 you know the comparative prices of thermistors and
23 resistors?

24 A. I don't know-- yes, I do. I know how much
25 thermistors cost and I know what it takes to program

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1 temperature. We use temperature controllers in my lab all
2 the time and we're measuring temperatures, we're using
3 thermistors, we buy thermistors and we replace them and we
4 program them and so forth. So we do all of that. So I have
5 some general feeling of the prices of thermistors and what
6 it takes to involve, to get them to work and to, to operate
7 them.

8 Q. But do you know, like the relative prices,
9 thermistor versus resistor?

10 A. Yeah, you know, it's-- yes, I do. I know what
11 resistors cost, I know what thermistors cost, but it's also
12 a combined system. You know, how do you get the fixed
13 resistor to work with the communication of it and the
14 chipset, not only in the chipset on the battery pack, but
15 also at the computer level? And that's the more expensive
16 part. It's, you know, a few cents to buy a resistor, it's a
17 few more cents perhaps to buy a thermistor, but it's more
18 expensive to do the programming to get it right. And having
19 done this, it's easier to follow the specifications. I've
20 done this. Follow the specification that the company
21 provides you because they're very willing to provide you
22 information to follow their specifications so you can work
23 with them. They, they want people to work with them to make
24 battery packs work. It's much easier to do that than to
25 work on your own blindly with no help to try to figure out

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1 what, you know, what temper-- what, what resistance values
2 equals what temperature and what range of temperatures. So
3 it's much more difficult to work blindly like that, perhaps
4 even with a simpler system of just a single resistor, than
5 it is to work with the company, get information and work
6 collaboratively with them.

7 Q. But we're talking about counterfeiters here.
8 Right? So they're not going to work with HP.

9 A. They're probably not going to work with HP.

10 Q. Yeah. And then-

11 A. it's going to make their-- that's going to make
12 that even more difficult for them because they're not going
13 to put the thermistor in because that's even more difficult,
14 and they're not going to put the resistor in because that's
15 difficult. So they're just going to go to systems like this
16 one where none of those safety features were, were
17 implemented.

18 Q. So just on that price thing, the resist--, I,
19 again, total layman's effort here, but from what I looked
20 at, it looks like a thermistor is about 100 times more than
21 a resistor. Does that sound right to you?

22 A. It depends on the thermistor and the range.
23 These are very simple thermistors that measure temperature
24 over a very narrow range. You know, 0 degrees Celsius to 46
25 is all they need. And it also depends upon the quality of

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1 the resistor. I mean, you can buy very expensive resistors.
2 So, no, I would not agree that it's a factor of 100. It
3 depends upon exactly what resistor and exactly what
4 thermistor.

5 Q. Okay, but that's not out of line?

6 A. Might be very much out of line.

7 MR. MANKOFF: Object to form.

8 Q. Well again, layman's effort, right? I looked up
9 some thermistors, base value of 10,000 ohms, they were 100
10 times the cost of a fixed resistor. But again, I'm not
11 privy to all those things, but does that sound like it makes
12 sense to you?

13 A. It depends on the particular thermistor and the
14 particular resistor. Like I said, you can buy extremely
15 expensive resistors that give you a very tight resistance,
16 but therefore would convert to a very tight temperature,
17 which might be appropriate. And so very cheap resistors
18 are, you know, in the pennies per pound, you might say.
19 They're very inexpensive, very detailed thermistors over
20 wide temperature range are very expensive. You know, it's
21 such a wide range. They're overlapping both of those. And
22 I can't comment on anything about that. I didn't look into.
23 It wasn't relevant to me in my in my review.

24 Q. Based on your testimony, we talked about how
25 it's possible for counterfeiters to reverse engineer

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1 authentication schemes that are used, right?

2 A. Yes.

3 Q. And in light of that, how can you be sure that
4 the fire would have been prevented if HP had to deployed an
5 authentication scheme?

6 MR. MANKOFF: Object to form.

7 REPORTER: I'm sorry to interrupt. I didn't
8 get the last part of that question.

9 MR. LEVITES: Then how can you be sure that
10 the fire would have been prevented if HP had an
11 authentication scheme?

12 MR. MANKOFF: Same objection.

13 A. So the authentication system is easily
14 programmable to completely reject the battery, right? That
15 even if it fits physically, the authentication system could
16 have gone out to the battery, queried the chipset on the,
17 the fuel gauge, query the fuel gauge and got an incorrect
18 answer and then simply shut the laptop down. And in that
19 case it shuts off all power to the laptop and as a result
20 shutting up all the power off the laptop, there's no way for
21 that battery pack to go undergo thermal runaway.

22 Q. So. I understand that, Dr. Martin. I do
23 appreciate that. What I'm trying to get at is if, if
24 authentication schemes can be reverse engineered and they
25 can be defeated, how can you say with certainty that the

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1 fire would have been prevented?

2 A. Well, first, I never said that all of these
3 authentication systems can be defeated. The SHA
4 authentication scheme is extremely difficult to defeat.
5 Every time you put your credit card in, you rely on SHA
6 light authentication schemes and trillions of transitions--
7 transactions go on every day without any error. So they're
8 extremely difficult to break. In this case where you're
9 about, you've got a, you know, got a one off counterfeit
10 company that doesn't have a lot of resources. They're not
11 Visa, they're not American American Express, they have no
12 resources to develop the complex capability to break these
13 extremely, 2 to the 160th power possibilities that a simple
14 SHA authentication scheme implements. So had that
15 implement, had that scheme been implemented, that battery
16 pack would have been rejected and the battery pack would
17 have been shut off and the laptop would have been shut off
18 until such time as a authenticatable laptop battery would
19 have been put in.

20 Q. Okay, so I get that. I also understand that
21 because you've testified consistently that in your view it
22 is highly unlikely that the SHA1 authentication scheme could
23 be defeated. But in view of the possibility that it could
24 be defeated, even though it's unlikely, even though it's
25 very difficult, in view of that fact, how can you be certain

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1 that the fire would have been prevented had the
2 authentication scheme been deployed?

3 A. Because the probability of-

4 MR. MANKOFF: Objection to form.

5 A. Sorry-- because the probability of that event
6 being defeated, the probability of the authentication system
7 being defeated is so improbable that it will not happen.
8 I'll give my thermodynamics example. Conceptually it's
9 possible, you know, for the, the rug to jump up to the
10 ceiling, but the finite, the possibility is so infinitesimal
11 that it never happens. That's the case here, that, that the
12 probability is so infinitesimal that it simply doesn't
13 happen.

14 Q. Okay, so the pro-- that you would put the
15 probability of the defeat of the SHA1 algorithm in the
16 carpet flying category. Is that fair to say?

17 A. It's, and we, and we rely on it every day for
18 all of our financial transactions, not the SHA one, but
19 things like that, authenticating systems of that complexity.
20 Yes.

21 Q. Right. We use SHA2 and other systems that have
22 more characters and more factors. Right?

23 A. Yes, yes. It's so much easier to understand
24 that the battery pack simply went into thermal runaway.

25 Q. You know that-- so we just talked about, you

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1 know, your certainty that you have here and how the
2 probabilities lead you to that certainty. But my question
3 is, is there anything you did to test that?

4 MR. MANKOFF: Objective to form.

5 A. No, I didn't test any of the authentication
6 schemes, no.

7 Q. And is it fair to say you never tested whether
8 the notebooks you contend in your report had battery
9 authentication that would prevent the use of counterfeit
10 batteries, actually did so, and prevented the use of those
11 batteries?

12 A. The only one I considered was the HP, and we
13 were told by HP staff, technical staff, that there was no
14 authentication system implemented on that Pavilion laptop.
15 So I took them at face value.

16 Q. Okay, so you-- so that's a yes. You never
17 tested whether these other notebooks had this capacity and
18 did in fact prevent the use of counterfeit batteries?

19 A. I'm not sure what other laptops you're talking
20 about.

21 Q. Well, we talked at length about the Texas
22 Instruments and the notion that other manufacturers were
23 deploying these schemes. Right?

24 A. I didn't know that we were discussing that they
25 were deploying these schemes. I think we were discussing

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1 that it was perhaps probable that they were not deploying
2 these schemes just like HP was.

3 Q. Right. So we don't know one way or another
4 whether the schemes were deployed and whether they did or
5 did not prevent the use of unauthorized battery packs.
6 Fair?

7 A. And, yeah, that's true. The only thing I say is
8 that I've been told by HP that they did not implement
9 authentication schemes in this particular laptop in this
10 particular year.

11 Q. Okay. And you could have got a Pavilion DV6 and
12 put a counterfeit battery in it. Right?

13 A. I could have, but I wouldn't have. Right?
14 Because that's a dangerous situation. I don't want to catch
15 my lab on fire. I don't want to catch my house on fire.
16 You know, it doesn't make sense to do that because it's a
17 dangerous situation.

18 Q. Understood. Yeah, I mean, how do they do as even
19 now that you're saying it, how do they even do that in that
20 Larsson study without burning the whole building? They got
21 12 cells going in a runaway?

22 A. Yep. So think half-inch thick steel. Think of,
23 think of a separate laboratory that has solid concrete
24 walls, solid concrete base, solid concrete roof, and then
25 there's vents at the top. And then inside that you've got.

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1 It's called a calorimeter. It's called an arc calorimeter.
2 And that calorimeter is built out of half inch thick steel.
3 And you put your cells inside that battery tester and then
4 you hook up these electrical leads going through the walls
5 of the battery tester and the furnace, you might say the
6 oven. And that allows you to measure the state of charge
7 and discharge and charge. And then, then the whole-- inside
8 that furnace, it starts to warm up and it-- you just design
9 it out of such thick steel that, yep, you get a fire in
10 there.

11 Q. Bomb shelter.

12 A. It's a bomb shelter. And you make a mess of it.

13 Q. You don't have that capacity at Iowa?

14 A. Yes, we do.

15 Q. You do. So you could have done it at Iowa,
16 right?

17 A. Could have done it at Iowa. Yes. We could do
18 tests very similar to Larsson. Don't know that we would run
19 12 cells at a time, but we would run a sequential cells, as
20 I'm pretty sure Larsson did. He didn't measure all 12 at
21 the same time. He would. Because that would cause
22 cascading like happened here. That would cause cascading,
23 thermal runaway.

24 Q. Okay. And I'm gonna try to just finish these
25 last couple of questions here. Have you understood all my

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1 questions today?

2 A. I have. You've been very good to work with.

3 Q. Okay. And is there anything else you want to
4 tell me about this fire or your investigation of the
5 Marcellin notebook?

6 A. No, you've asked me sufficient questions.

7 Q. Okay. Are you offering an opinion on notebook
8 computer detection capabilities for non-OEM battery packs?

9 A. No, I'm only offering opinions on this
10 particular battery pack for this particular laptop in this
11 particular instance.

12 Q. Okay, let me just quickly look. I think that's
13 pretty much it. Thank you so much for your time, Dr.
14 Martin.

15 A. Thank you.
16 (Deposition concluded.)

17 * * * * *

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I, Cynthia Belmonte, a Notary Public and Court Reporter, in and for the County of Oneida, State of New York, do hereby certify that the foregoing is a true and correct transcript of the above-entitled matter.

Date: March 25, 2025

Cynthia M. Belmonte,
Court Reporter

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